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Measuring progress in reading achievement between primary and secondary school across countries

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Abstract

This paper discusses a method to compare progress in reading achievement from primary to secondary school across countries. The method is similar to value-added models that take into account intake levels when comparing student progress in different schools. Value-added models are preferred over raw scores as they better reflect school efforts. The method discussed in this paper uses measures of achievement in primary schools from PIRLS and compares them to secondary school results from PISA. Changes in achievement are estimated using IRT models and random draws of test items. Results describe an interval in which estimates of progress can lie, depending on the comparability of these two assessments. Estimates of progress are also adjusted for student age, gender and other characteristics that differ between countries and surveys. Separate results by gender, immigrant status, and proficiency level provide a detailed picture of how students in different countries progress in school from the age of 10 to 15.

Keywords:
human capital, cognitive skills, international student achievement tests, education, PISA, PIRLS

JEL:
I21, I24, J24, O15, P50

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Introduction

International surveys of students, such as the Progress in International Reading Literacy Study (PIRLS) and the Programme for International Student Assessment (PISA), assess representative samples of students from different countries to provide estimates of their average level of skills and knowledge related to reading competencies. Country rankings produced by these surveys usually attract considerable attention, while more in-depth analyses of the factors that may influence these results are discussed less often. Although countries can compare their students' skills levels to those of other participating countries, cross-sectional surveys like PIRLS or PISA provide limited guidance to policy makers. Average country performance is only partly affected by teaching quality; between-country differences in such factors as parents' education, a country's economic and social development, or school enrolment levels usually play important roles in defining student outcomes.

In recent years, the so-called value-added scores have often been considered as much better indicators of school effectiveness for policy purposes (OECD, 2008). In national assessments, a school's mean score is rarely taken as a measure of the school's efforts because it largely depends on the socio-economic characteristics of students and only partly on how well teachers work. Thus, value-added scores, which take into account prior student scores or look at growth trajectories and the impact schools or teachers have on them, are more often preferred when assessing schools and teachers. While these methods are still being developed, there is no doubt that they provide more useful policy indicators than average scores collected at one moment in time.

This paper provides estimates similar to value-added scores but at the country level. We compare reading achievement in primary school, as measured by PIRLS, to reading achievement of 15-year-olds in the PISA survey. The results of PIRLS 2001 are compared with results from PISA 2000, while the results from PIRLS 2006 are compared to results from PISA 2009.[1] Achievement is compared using random draws of test items from both surveys, so our results describe an interval in which estimates of progress can lie, depending on the comparability of the two assessments. We also adjust progress estimates for differences in the distribution of student background characteristics and for differences in testing age across countries and surveys. The results are precise enough to compare changes in achievement across countries, even after taking into account the fact that different combinations of test items would give different estimates of progress. Results are provided for all students and for subpopulations defined by gender, immigrant status, and proficiency level. These results provide detailed evidence on how students in different educational systems progress from the age of 10 to 15.

Section I of the paper discusses data used in this study and how differences between PIRLS and PISA were taken into account. Section II gives details on the methods used, and Section III provides results. Section IV summarises our main findings.

[1] PIRLS is entirely devoted to assessing reading achievement, while PISA concentrates on different subjects in different cycles. Both PISA 2000 and PISA 2009 focused on reading skills and provide the most reliable comparison with PIRLS. Although PISA 2003 and PISA 2006 also examined reading performance, they did so using a much more limited test-item pool.

I. Similarities and differences between PIRLS and PISA

Both PIRLS and PISA aim to measure student achievement in reading in an internationally comparable way. While the organisations involved differ, these two studies have many things in common. They are based on similar methodologies, the experts involved often work for both studies, and despite some apparent differences, their general goal is similarly stated: both want to provide internationally comparable measures of what students can do in reading. The main difference is that PIRLS is conducted in primary schools while PISA measures achievement in secondary schools. That provides an opportunity to compare how countries differ in their students' achievement progress from primary to secondary education.

This study analyses publicly available datasets provided by the organisers of PIRLS and PISA. Data and documentation are accessible online.[2] The data used in this paper differ in two respects: First, we re-scaled performance scores using the same model for both PIRLS and PISA to increase comparability and assess how the choice of test items affects our estimates. The model we used, which is explained in the next section, differs from the original models applied in these two surveys, but our results give the same ranking of countries, with only slightly different values of average performance. Second, we separated data for England and Scotland, as they participated in PIRLS independently and were published under "United Kingdom" in PISA. Only data for Scotland were considered, as 2000 data for England were withdrawn from official PISA publications due to a large non-response rate. For the comparison between PIRLS 2006 and PISA 2009, we also separately analysed the data from Canadian provinces, treating them as other countries. To a large extent, Canadian provinces have separate educational institutions, and they participated separately in PIRLS 2006. The large Canadian sample in PISA 2009 also allows for comparisons between provinces.

To start comparing results from these two surveys, it is convenient to put them on a common scale. Performance scales in both surveys are derived from IRT models and standardised to have mean of 500 and a standard deviation of 100 in a chosen group of countries. While in PIRLS this group comprises all participants, in PISA, only OECD countries are considered when standardising the scale. Both choices are arbitrary, but we decided to put scores on the PISA scale, because that scale has a more meaningful interpretation, with a mean of 500 among OECD countries as a commonly used benchmark. The next section describes in details how re-scaled outcomes were put on the PISA scale.

Differences in sampling frames and testing frameworks seem to be crucial when thinking about direct comparisons of PIRLS and PISA results. We address both issues in this paper. PIRLS surveys pupils in a grade with the highest number of 10-year-olds, which, for most countries, is the 4th grade. PISA surveys 15-year-olds regardless of the grade in which they are currently enrolled. This leads to greater variation in age for PIRLS and greater variation in grade for PISA. To address this issue, we adjust for differences in age distribution. Adjusting for grade distribution is a far more debatable method, as countries differ in grade-retention or -promotion policies, and a student's grade level cannot be considered as fundamental to the student. In fact, countries participating in PIRLS differ greatly in the average age of students and within-country age distributions. Table A1 in the Appendix compares PIRLS 2001 to PISA 2000 in this

[2] PIRLS data and documentation are available at http://timss.bc.edu. PISA data and documentation are available at www.pisa.oecd.org.

regard. Similar patterns can be found in a comparison of PIRLS 2006 and PISA 2009 (see Table A19 in the Appendix).

Student age is correlated with achievement, as older students generally perform better. Mean age differences between countries can affect comparability of mean scores and need to be considered when constructing estimates of progress in achievement. In PIRLS 2001, students in Latvia and Romania were more than one year older than students in Iceland, Italy and Scotland. Across all PISA countries, the average age is very similar. In effect, the age difference between students tested in PIRLS 2001 and PISA 2000 varies considerably between countries. The same pattern can be shown for PIRLS 2006 and PISA 2009.

Differences in testing age clearly affect the comparability of measures of achievement progress between PIRLS and PISA. The relation between mean age and reading scores is slightly positive when considering only PIRLS data. However, the relation between the mean age difference between PIRLS and PISA, and the mean difference in reading performance, which is our basic measure of progress in reading achievement, is clearly positive. The correlation between the unadjusted difference in performance between PIRLS and PISA and the difference in mean age between these two surveys is close to 0.7 (see Table A1 in the Appendix for detailed data for PIRLS 2001 and PISA 2000). This simple evidence suggests that any estimates of achievement progress taken from comparisons between PIRLS and PISA have to be adjusted for age effects. We propose a simple method that addresses this issue.

Another critical difference is related to the two independently developed assessment frameworks. PISA is generally considered as a test aimed at measuring the literacy needed to function in real-life situations, while PIRLS is more closely related to countries' school curricula. Nevertheless, a careful analysis of test content and framework assumptions for both PIRLS and PISA reveals many commonalities (Mullis et al., 2006, see Appendix C). We are aware of only one study that empirically addresses these issues using item-level data (see Grisay, Gonzales and Monseur, 2009). Other studies discuss comparability of PIRLS and PISA results more generally (see Brown et al., 2005; Jakubowski, 2010). The main conclusion from these studies is that although there are some differences between the content and methods in PIRLS and PISA, these two surveys are similar, and country results from both are highly correlated.[3]

Although we do not attempt to discuss in detail the content of PIRLS and PISA (see Mullis et.al, 2006, for this type of discussion), we do examine empirically how different pools of test items affect estimates of progress in achievement. Our assumption is that if the two tests differ greatly in content, then being tested on different sets of items should give obviously different results. More precisely, if the volatility of estimates of changes in achievement is relatively high when considering random draws of items from the two surveys, then the comparability of content would seem to be an issue. If countries' rankings are stable regardless of the item pool selected for comparison, then differences in content can be considered to have negligible effects on the estimates. Confidence intervals for our estimates of progress contain this kind of uncertainty. Details of the methodology we used are presented in the following section.

[3] For example, the correlation between country scores from PIRLS 2001 and PISA 2000 is above 0.6.

II. Methods

Errors related to performance comparisons between two student assessments

Performance scores from two different assessments cannot be directly compared unless a procedure called linking is used. There are several methods that link scores between two tests and their usefulness depends on the tests involved and the samples of students considered. In general, two assessments can be directly linked if (1) tests are conducted on samples that include the same group of students or on samples that are randomly taken but fully comparable; or (2) the two assessments included common test items or items that are interchangeable. Obviously, none of these assumptions is met when comparing PIRLS and PISA. These two assessments use separate pools of items that are prepared for students at different ages. Samples of students are representative of different populations, defined by grade in PIRLS and by age in PISA.

There are, however, other linking possibilities when tests do not use the same sample of students or common items, but measure similar constructs. One approach is often called "predicting". According to von Davier (2010, p. 22), "The goal of predicting is to minimize errors of prediction of a score on the dependent or criterion variable from information on other predictor variables". This approach is commonly used in value-added modeling, where scores from different grades are rarely put on the same scale, but regression models are used to adjust for scale discrepancies. In our case, it less important that PIRLS and PISA are on different scales, while it is crucial that performance in PIRLS can predict performance in PISA. A related approach is often called "concordance analysis", where it is assumed that the two tests are measuring similar constructs but differ in test specification or the "test blueprint" (Feuer et al., 1999; Kolen, 2004). A classic example of concordance analysis is establishing tables to compare SAT and ACT tests.

In our case, we assume that PIRLS and PISA measure similar constructs with some differences in assessment frameworks. Since samples of PIRLS and PISA are also nonequivalent, we adjust student samples to make them more comparable and account for construct discrepancies by estimating a link error that inflates reported confidence intervals.

In discussing the methods employed in this paper, it is worth looking at sources of error in comparing results from international surveys across time and student cohorts (see Wu, 2010). The credibility and precision of comparisons can be undermined by:

(a) sampling errors that are related to sampling students from populations

(b) measurement errors that are related to test precision

(c) construct-discrepancy errors that are related to differences in constructs measured by the two tests

(d) IRT-model mis-specification errors that are related to mis-specification of models used to estimate performance scores

(e) population-discrepancy errors that are related to comparing performance using samples that are representative of different populations

In PIRLS and PISA, sampling and measurement errors are usually reported for all statistics. For example, in PISA, sampling errors are calculated using BRR replicate weights, while measurement errors are

calculated by looking at differences in estimates obtained with different plausible values. In PISA, IRT-mis-specification errors for common items are called link errors and are added to all final estimates for performance trends across assessments. Similar methods are used in PIRLS, although the link error is ignored in this study. None of these studies discusses construct-discrepancy errors as it is assumed that the tests used within the same study measure exactly the same constructs.

Constructs are theoretical measures that are not observed in practice. Thus, we cannot say if some items represent constructs common to the two assessments. However, we can assess how taking different sets of items and comparing PIRLS and PISA outcomes using these subsets changes estimates of achievement progress between the ages of 10 and 15. While the main estimate is not affected by this exercise, we inflate standard errors and report simulated confidence intervals in which estimates of achievement progress can plausibly lie. In this way we account for both construct-discrepancy errors and IRT-model mis-specification errors, as results are estimated on different sets of items. If simulated confidence intervals are very wide, it would mean that, for some sets of items, comparisons between PIRLS and PISA give very different results for a particular country. On the other hand, if these intervals are relatively narrow, this means that PIRLS and PISA can be compared and that errors related to using different sets of items can be used to judge the reliability of this comparison.

Comparisons between two surveys can be also invalid if the surveys take samples that are representative of different populations. This population-discrepancy error can be limited by adjusting the samples to make them representative of similar populations. Obviously, students sampled in PIRLS and PISA are from different populations. Besides the fact that they differ in age, they are differently constructed, so they might also differ in background characteristics that are related to performance. We adjust PIRLS samples to make them more comparable with PISA samples. First, we eliminate the age effects from both samples. Second, we reweight PIRLS samples so that important background characteristics are balanced. As a result, we compare PIRLS and PISA on constructed samples of students that represent different student cohorts but are otherwise similar. Thus, these samples provide a comparable basis on which to judge how achievement progress changes across time and within each country.

Re-scaling the performance results

Before any comparisons can be made between two tests, performance outcomes should be re-scaled so that results can be measured on a comparable scale, and to limit the impact of differences in scaling methodology on final comparisons. Our approach resembles scaling procedures used in PISA (see the PISA 2006 technical report for details of scaling procedures). In the first step, we sampled 500 students in each country with the probability reflecting their sampling probability. This assures that each country has equal weight in the calibration process and that item parameters are estimated on samples representative of the underlying population. In the second step, we employed the two-parameter IRT model (2PL) to estimate item parameters separately for each survey.[4] In the third step, datasets with all observations were used and scores were assigned based on parameters obtained in step two, using the expected-a-posteriori

[4] Although the main analysis and item sampling was conducted in Stata statistical package, IRT modeling was conducted by PARSCALE 4.1 (see Muraki & Bock, 1997).

(EAP) method.[5] Finally, to account for measurement errors, five plausible values were drawn from the unconditional posterior distribution for each student.

For reporting, all scores were standardised to have a similar distribution as the PISA reading performance scale. The mean score and standard deviation on the PISA original scale were calculated for countries considered in our study (separately for PISA 2000 and PISA 2009, as the number of countries differ). Then the newly estimated scores based on all PISA or PIRLS items were re-standardised to have the same mean and standard deviation as student scores in PISA. As not all OECD countries participated in PIRLS, the scale's mean is not 500; it is slightly lower in our sample of countries. Nonetheless, the OECD benchmarks of 500 as a mean and 100 as a standard deviation are still valid. Thus, the values of the estimates in achievement changes presented in this paper are on a scale that is comparable to that used for measuring reading performance in PISA. As PISA reading performance scales are comparable between 2000 and 2009, our results from both comparisons, PIRLS 2001 with PISA 2000 and PIRLS 2006 with PISA 2009, are presented on the same scale.

The final shift of minus 100 score points was applied to PIRLS results to reflect the supposed score point gain between the age of 10 and 15. The quasi-experimental study conducted with PISA 2009 data estimates that the average grade gain is close to 20 score points on the PISA scale (see Borgonovi, Jakubowski, forthcoming). This suggests that the average score point gain between the age of 10 (mean age in PIRLS) and 15 (mean age in PISA) is close to 100 score points. Different studies of student progress provide similar results, showing that the average grade gain is close to 1/5 of standard deviation (see Ingels, et. al. 1994), which also supports our approach (20 score point equals 1/5 of a standard deviation on the PISA scale). Thus, our achievement progress results can be interpreted in terms of the average gain across five years of education. In any case, the results should be interpreted in relative terms as they compare achievement progress among countries considered in our study.

Simulation to estimate link error (construct-discrepancy and IRT mis-specification errors)

Serious bias in the estimation of progress in achievement may arise from discrepancies in constructs measured by PIRLS and PISA. When linking two IRT-scaled scores, a mis-specification error of IRT models should also be taken into account. In this section, we discuss the methods used to account for these two sources of uncertainty, which we call a link error. We employ simulation methods because of the large number of test items used in the studies (in all studies, there are at least 100 reading items; see Table 2 below for details). Although to the best of our knowledge our approach had never been applied in this context, it is based on Monte Carlo simulations widely used in statistics and is similar to resampling methods already proposed in equating literature (Sheehan and Mislevy 1988; Monseur, Sibberns and Hastedt 2010; von Davier, Manalo, Rijmen 2008, Heberman, Lee, Quain 2009). We follow a similar strategy that resembles the replication approach widely used in survey statistics. This is based on the idea that with half-samples one can estimate unbiased estimates of parameters and their standard errors (McCarthy, 1969).

[5] No adjustments were made for booklet design and no additional variables were used during the calibration process. Those test items that students did not reach were treated as missing values in the item parameters-estimation phase and as incorrect responses when assigning scores to students.

Our approach consists of three steps. First, items are randomly sampled from each survey. Each item is sampled independently of others with the same probability of selection equal to ½. Thus, on average, half of the items are sampled from the item pool, but the actual number of test items differs across simulated samples (see Table A2 in the Appendix). For instance, in PISA 2009, we used a pool of 131 to draw 500 samples of an average size of about 66 items. The smallest number of items used to compute student ability was 49 and the largest was 83. The standard deviation of the number of items across all 500 replications was about 6. While the number of items considered in each replication varies, it is still large enough to reliably estimate student achievement.

Then we replicate the scaling procedure used to obtain main performance estimates, but apply them 500 times to random samples of items. Thus, we sampled 500 students in each country and employed the two-parameter IRT model (2PL) to estimate item parameters separately for each survey, which we then used to assign scores to all students. These two steps were repeated 500 times, giving a total of 500 replications of student achievement.

In the third step, replicated outcomes were standardised, using a method similar to that used with the main results, to show a distribution that was congruent with the PISA reading performance scale. The shift needed to place results on the PISA scale was calculated with respect to the average statistics across all replications (average of 500 means and average of 500 standard deviations). Thus, although scores in each replication could still differ in mean value and distribution, they followed the PISA reading performance scale. In effect, our link error estimates that summarise construct-discrepancy and mis-specification errors are represented on the original PISA scale on which our results are reported.

Combining sampling, measurement and link errors

PIRLS and PISA are complex surveys of student populations, involving multistage sampling designs and plausible values as student outcomes. We take that into account by using original methods employed in each survey, namely, jackknife in PIRLS and BRR replicate weights in PISA. In every case, we use plausible values to account for measurement error. The standard error is calculated by using this formula

$$SE = \sqrt{SE_{PIRLS}^2 + SE_{PISA}^2 + link^2}$$

where SE_{PIRLS} and SE_{PISA} are sampling and measurement errors calculated in the same way as in the original surveys, and where *link* corresponds to link errors obtained using the simulations described above. Please note that these errors will differ depending on the method or model used to calculate the estimate of achievement progress.

For each model, sampling and link errors were recalculated. In all cases, the link error was obtained as the standard deviation of estimates calculated over 500 replications.

Adjusting for differences in student samples

As the PIRLS target population and survey design differ from those of PISA, they need to be adjusted before any meaningful comparisons can be made. First, results are reported not only for all students, but also for subpopulations. Then, to make samples from both studies more similar to increase comparability,

two adjustments are made: the impact of student age and gender on performance is fully taken into account; and PIRLS data are reweighted to match the distribution of background characteristics in PISA.

Results for subpopulations of students provide useful information on how these groups of students progress from primary to secondary school. Separate results are reported for boys and girls, native students, defined as those born in the country of the test, and native boys and girls. Girls and boys differ in their reading-development trajectories, and the gender gap in reading achievement is also different across countries. Thus, looking separately at these two groups makes sense, especially in reading.

Comparisons of achievement progress that include immigrant students can be easily criticised. Some of these students may have migrated to the country after the age of 10, so they had no chance to participate in PIRLS, but they took the PISA test. Thus, results for native students are reported separately.

Results were also adjusted using regression and reweighting approaches. Estimates of achievement progress presented in this paper were obtained from regression models run separately for each survey, with data from all countries pooled into one dataset. Country estimates were obtained as coefficients for dummy (0/1) variables denoting each country with a regression constant excluded from estimation. The first adjustment was made in the regression by controlling for the effect of age, centred at the median value for each survey (age and its squared term were added to the regression to model the curvilinear relation found in PIRLS data). Thus, country constants were obtained for students of the same age in each survey (around 10 in PIRLS and around 15 in PISA). By doing so, the effect of age within each survey was excluded, and between-country differences in the mean age of students tested in PIRLS and PISA were taken into account. In other words, performance results adjusted for age effects are as if students had the same age in PIRLS and PISA in each country.

Then, regressions were run with reweighted data to adjust the distribution of background characteristics in PIRLS to match those in PISA. The main results presented in this paper are adjusted for gender distribution through reweighting of observations by inverting the percentage of boys and girls in the population. Thus, these estimates assume an equal number of boys and girls in each country and in each survey. Thus the estimates are not affected by sampling variations in the number of boys and girls. While the percentage of girls and boys might be different in the population, these discrepancies are relatively small and similar across countries.

Additional results were obtained by reweighting for other student characteristics according to a methodology proposed by Tarozzi (2007). This methodology, in turn, is based on a more general approach of propensity score matching or reweighting (Rosenbaum, Rubin, 1983). A logit regression was applied to predict, for each student, the probability of being sampled for PISA, depending on a set of background characteristics. In other words, in the logit regression, the dependent variable was equal to 1 for students sampled in PIRLS and 0 for students sampled in PISA. The independent variables were student background characteristics that we wanted to balance across PIRLS and PISA. Then PIRLS probability weights were adjusted using this formula

$$w_{rew} = (1 - p) / p * w_{org}$$

where w_{rew} is the final weight after reweighting, p is the probability estimated from the logit model, and w_{org} is the original survey weight from PIRLS. Final estimates were obtained using the same regression model as for not-reweighted data, but using new weights. Samples were adjusted using reweighting for

number of books at home and parents' educational attainment, and for a set of dummy variables indicating the student's immigrant status (students born outside the country of assessment, parents born outside that country, students speaking a different language at home than the language of the test, and the interaction of all these dummies).

Before reweighting was conducted, any missing data on student background characteristics that were balanced between PIRLS and PISA were imputed using stochastic regression imputation, which, in most cases, is as effective as multiple imputation or maximum likelihood estimation with missing data (Enders 2010, p.46-49). Imputation was done to keep the sample size constant for comparisons with non-adjusted results. We used a multiple imputation model implemented in Stata statistical package (Royston, 2004).

Although regression analysis provides estimates of mean achievement progress across countries, one might want to look at similar estimates across the performance distribution. We provide such estimates by employing a quantile regression approach. We estimate the same regression models, but on the 10th and 90th percentiles of the reading performance distribution.[6] By doing so, we provide estimates of achievement progress across low- and high-achieving students. These can also be used as evidence that shows changes in the inequality of student performance. For example, if the progress among high-achievers is greater than that among low-achievers, then one can conclude that the variation in student scores increased in this country mainly because of greater progress made at the top of the distribution. Such evidence can be useful when assessing the distributional impact of education policies, when not only average achievement is considered but also differences in achievement across low- and high-performing students.

III. Results

Tables in the Appendix present achievement progress estimates separately for the comparison between PIRLS 2001 and PISA 2000 (Table A3) and the comparison between PIRLS 2006 and PISA 2009 (Table A4). These results are calculated using unadjusted data available for all students in the PIRLS and PISA samples. They do not take into account any differences between the two surveys, except that the standard error of the achievement progress estimate includes a link error, but could serve as a baseline for comparisons with adjusted estimates of achievement progress. The tables contain estimates for all students, but also separate results for boys, girls and native students (additional results, including country averages, in each survey and error components that were used to calculate standard error, are presented in Tables A5 and A6 in the Appendix).

These data show that while, in general, performance in PIRLS and PISA is highly correlated, countries differ in the magnitude of the change in achievement between these two surveys.[7] For example, while

[6] In fact, we estimated achievement progress across a range of performance levels to construct figures that are presented at the end of the Appendix. While we present results for the 10^{th} and 90^{th} percentiles only in the tables, additional results can be obtained from the authors.

[7] Please note that country averages are highly correlated with original results from official PIRLS and PISA reports. Correlation coefficients are about 0.98-0.99, demonstrating that the main results are not changed greatly with our scaling methodology.

Canada and Hungary seem to show very similar performance in primary school, the achievement progress estimate for Canada is much larger than it is for Hungary. Thus, in relative terms, Hungarian students gain less than their peers in Canada when progressing from primary to secondary education. In effect, Canadian 15-year-olds outperform their Hungarian peers. Moreover, even within countries different student groups progress differently. For example, while students in Canada gain more in relative terms, this positive effect tends to be smaller for boys than for girls, with different patterns observed across provinces.

The results show that in most cases, both comparisons give consistent data. For example, while it seems that Italian girls gain more than boys when considering the change between PIRLS 2001 and PISA 2000, the same picture emerges when looking at the comparison between PIRLS 2006 and PISA 2009. Similarly, both comparisons suggest that while Hungarian and Canadian students perform similarly in primary school, the latter gain more between primary and secondary education.

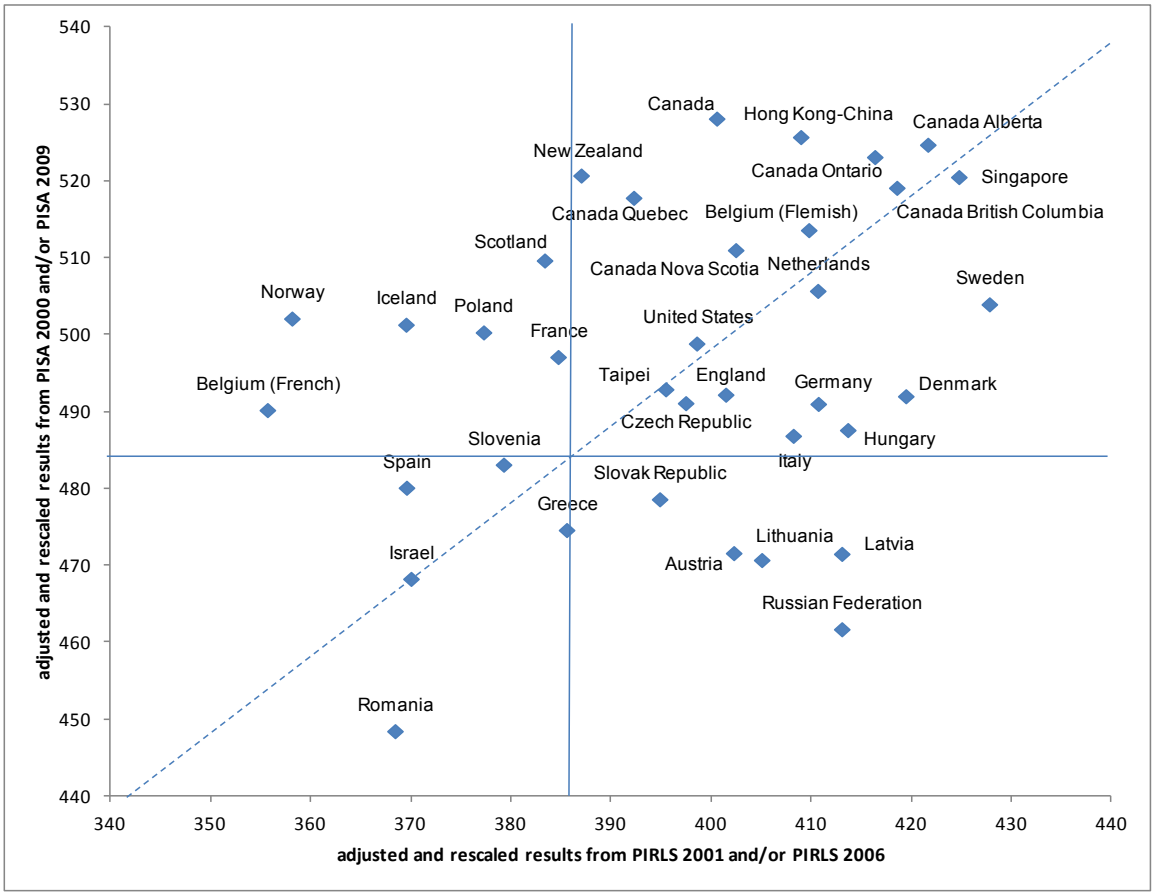
We now turn to results that provide the most reliable comparisons in our view, namely, those obtained after taking into account the effect of student age and balancing gender across countries and studies. The main results are summarised in Table 1 below, for all students, and separately for boys and girls (see more detailed results in Tables A7-A10 in the Appendix). These results are not very different from the unadjusted ones, except for countries that have a very different mean student age in PIRLS. For example, for the comparison between PIRLS 2001 and PISA 2000, the results change for countries like Bulgaria, Latvia or Romania, where accounting for age makes a difference. Otherwise, results are nearly the same, with a correlation of 0.99 between unadjusted and adjusted achievement progress estimates (see Table A18 in the Appendix for the correlation matrix and Table A19 for a comparison of age and gender distribution before adjustments).

While countries that show lower performance in primary school seem to experience greater progress, in many cases they are still outperformed by countries that show high performance in primary school. This evidence is summarised in Figure 1, where adjusted results in PIRLS and PISA are compared. For countries with data from the comparisons between PIRLS 2001 and PISA 2000 and between PIRLS 2006 and PISA 2009, a simple average of performance in both PIRLS surveys and a simple average of performance in both PISA surveys are compared. For other countries, results from only one available PIRLS or PISA survey are presented. The horizontal lines show average performance in PISA and PIRLS, which, for this comparison, are equal to 386 and 484, respectively. Thus, countries above the horizontal line perform above average in PISA, while countries to the left of the vertical line perform below average in PIRLS. The 45-degree line shows how countries' performance changes between primary and secondary education. Countries above this line perform relatively better in secondary education, i.e. show greater achievement progress, while countries below this line show less achievement progress compared with other countries in the group.

In Norway, Iceland, Scotland, and Poland students perform relatively poorly in primary schools, but thanks to great achievement progress, they perform above average in secondary school. This also happens to some extent in the French-speaking part of Belgium and in France, although performance levels in PIRLS are closer to average. Spain and Slovenia are two countries that show below-average performance in primary school and relatively greater achievement progress, but not enough for students to perform above average in secondary school.

New Zealand, Canada and Hong Kong-China show the greatest achievement progress from already-high performance levels in PIRLS. The high PISA rankings of these two countries and one economy can be attributed to good performance in primary schools and effective learning at the secondary level. To a lesser degree, the Flemish part of Belgium shows relatively greater achievement progress even as it shows one of the best performance levels in primary school.

Figure 1. Comparison of age- and gender-adjusted performance in primary (average performance in PIRLS) and secondary (average performance in PISA) schools



Note: For clarity, Luxembourg and several low-performing countries (Argentina, Bulgaria, Indonesia, Macedonia, Qatar and Trinidad and Tobago) are not shown.

Table 1. Estimates of achievement progress adjusted for student age and gender

	PIRLS 2001 to PISA 2000						PIRLS 2006 to PISA 2009					
	All students		Boys		Girls		All students		Boys		Girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
Argentina	119.9	(10.2)	107.0	(9.6)	132.4	(13.1)						
Austria							69.3	(5.3)	59.8	(6.3)	79.0	(6.2)
Belgium (Flemish)							103.8	(5.0)	98.0	(5.5)	109.3	(6.2)
Belgium (French)							134.5	(5.8)	128.0	(7.4)	140.6	(6.4)
Bulgaria	18.9	(7.9)	10.1	(8.4)	28.5	(9.4)	19.2	(8.6)	6.9	(9.8)	32.4	(8.7)
Canada	127.5	(4.8)	122.2	(5.0)	132.2	(5.8)						
Canada Alberta							103.0	(6.1)	95.1	(6.8)	110.4	(7.1)
Canada British Columbia							100.4	(5.9)	91.3	(7.0)	109.0	(6.5)
Canada Nova Scotia							108.5	(5.4)	108.9	(6.9)	107.9	(6.2)
Canada Ontario							106.7	(5.9)	100.4	(6.7)	112.4	(6.8)
Canada Quebec							125.5	(5.8)	121.5	(7.0)	129.4	(6.4)
Czech Republic	93.6	(6.0)	84.2	(6.8)	103.2	(7.0)						
Denmark							72.5	(5.2)	69.1	(6.0)	76.8	(6.0)
England							90.6	(5.0)	93.0	(5.9)	88.3	(5.8)
France	113.6	(6.3)	105.7	(7.1)	121.2	(7.1)	111.1	(5.4)	101.9	(6.2)	120.0	(5.9)
Germany	80.5	(5.3)	71.7	(6.2)	89.6	(6.1)	80.0	(5.3)	68.6	(6.2)	91.7	(5.9)
Greece	89.0	(8.5)	80.2	(9.1)	97.1	(9.3)						
Hong Kong-China	134.5	(8.9)	138.6	(9.7)	130.2	(9.6)	98.9	(6.6)	92.9	(6.9)	104.5	(7.5)
Hungary	75.8	(7.2)	68.9	(8.4)	83.1	(7.6)	72.1	(5.9)	59.9	(6.5)	85.0	(7.0)
Iceland	132.1	(5.6)	123.3	(6.1)	139.9	(6.5)	131.4	(5.3)	124.6	(6.0)	137.6	(5.8)
Indonesia							123.1	(7.3)	115.3	(7.6)	131.0	(7.7)
Israel	94.7	(9.8)	100.2	(12.0)	88.4	(10.2)	101.7	(5.6)	92.7	(6.7)	110.4	(6.5)
Italy	83.5	(5.8)	70.6	(7.3)	95.7	(6.9)	73.6	(4.7)	59.5	(5.5)	87.1	(5.4)
Latvia	49.1	(6.9)	37.6	(7.5)	61.6	(8.3)	67.8	(5.3)	62.4	(5.9)	74.4	(6.2)
Lithuania							65.6	(5.1)	52.9	(5.8)	79.1	(5.7)
Luxembourg							23.6	(4.2)	9.8	(5.0)	39.2	(4.9)
Macedonia	83.6	(6.6)	72.9	(7.1)	94.6	(7.4)						
Netherlands							94.9	(6.9)	90.4	(7.4)	99.6	(7.2)
New Zealand	142.2	(6.4)	135.7	(7.8)	148.3	(8.0)	125.1	(4.5)	120.8	(5.6)	129.1	(5.3)
Norway	140.6	(6.3)	129.8	(7.4)	150.8	(7.0)	147.2	(5.8)	138.8	(6.4)	155.1	(6.6)
Poland							123.1	(5.1)	112.9	(5.7)	132.8	(5.9)
Qatar							153.8	(6.0)	146.4	(6.8)	160.6	(5.9)
Romania	85.8	(8.7)	88.4	(10.4)	81.7	(9.9)	74.1	(7.1)	64.9	(8.0)	84.5	(7.9)
Russian Federation	74.3	(7.9)	62.7	(8.5)	85.7	(8.3)	22.9	(6.5)	14.1	(6.8)	32.4	(7.2)
Scotland	138.8	(6.5)	135.9	(7.6)	140.7	(7.6)	113.7	(5.4)	117.4	(6.5)	109.6	(6.5)
Singapore							95.7	(5.3)	93.8	(5.8)	97.9	(5.8)
Slovak Republic							83.7	(5.2)	69.8	(6.3)	97.8	(5.5)
Slovenia							103.8	(5.5)	92.6	(6.3)	114.4	(6.0)
Spain							110.5	(4.6)	101.8	(5.0)	118.9	(5.3)
Sweden	78.0	(6.3)	71.1	(7.0)	85.5	(6.8)	74.2	(5.1)	67.9	(5.5)	81.4	(5.9)
Taipei							97.4	(6.2)	90.7	(7.0)	103.9	(6.9)
Trinidad and Tobago							125.3	(6.0)	116.0	(6.9)	134.4	(6.6)
United States	105.7	(9.2)	99.9	(11.0)	111.3	(9.1)	94.8	(6.1)	92.4	(6.9)	97.0	(6.5)

Results for all of Canada are based on a comparison of PIRLS 2001 with PISA 2000, while results for Canadian provinces are based on the comparison between PIRLS 2006 and PISA 2009. These provide additional insights into how achievement progress varies within Canada. Quebec is the province with the greatest achievement progress, while it also shows the lowest scores in primary school. At the secondary level, Quebec's performance is similar to that of other provinces. Alberta shows the highest performance in both PISA and PIRLS. Nova Scotia shows the lowest performance in PISA, despite having the second-greatest achievement progress due to the relatively poor performance in primary school. British Columbia shows the least achievement progress and was outperformed in PISA by Ontario, which shows slightly more progress. Despite these differences, all provinces considered in our study show similar levels of performance in secondary school and average or above-average achievement progress.

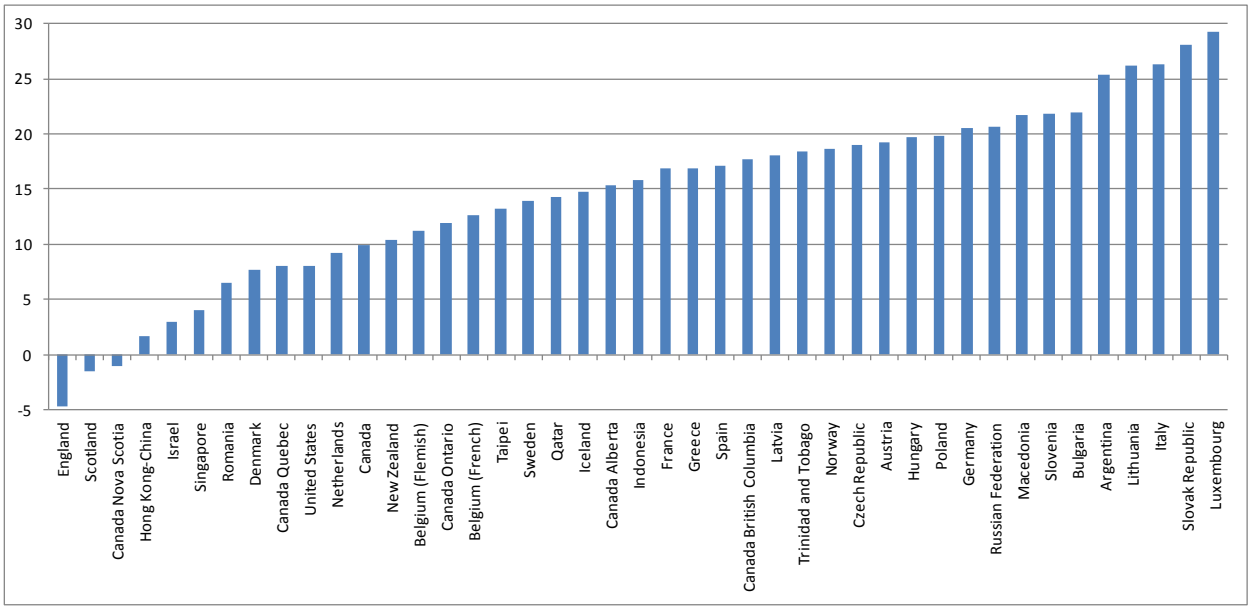
A group of countries, including the United States, Israel and Singapore, together with Chinese Taipei, shows stable performance levels relative to others. The Netherlands, the Czech Republic, Greece and the Slovak Republic, which show achievement progress slightly below, but statistically similar to, the average, can also be added to this group. These countries differ, however, in their levels of performance. Israel is below average in both PIRLS and PISA, Greece is slightly below average, and the other countries are above average.

The list of countries with relatively small achievement progress consists almost entirely of those that perform above average in primary school. However, these countries differ greatly in their performance levels and achievement progress. For example, Sweden shows relatively less achievement progress, but still outperforms most of the countries at the secondary level, while the Russian Federation was among the top performers in PIRLS, but is among the lowest-performing countries in PISA. Romania is the only country presented on the Figure that shows among the poorest performance in primary school and even worse performance in secondary school (the Figure does not present the lowest-performing countries for which data can be found; see Table 1).

It is worth noting that among countries with relatively small achievement progress, most have school systems that select and group students into different types of secondary schools, usually academic or vocational, at an early age. Countries like Germany, Hungary and Austria select students at the age of 10 or 11, while countries like Luxembourg, Bulgaria (not shown on the Figure, but with the least achievement progress; see Table 1), the Russian Federation, Lithuania and Italy all track students into different types of school before the age of 15. Sweden and Denmark are the only countries with small achievement progress and no early selection of students. Latvia recently raised the age at which selection of students for different types of school occurs. Latvian students tested in PISA 2009 had not yet been selected, while those tested in PISA 2000 had already been placed in different types of school. Achievement progress in Latvia is greater in the comparison that includes PISA 2009 data. Thus, one can conclude that systems with early selection show less achievement progress. This has already been reported in several studies using international surveys (see Hanushek, Woessmann, 2006; Jakubowski, 2010). Relatively high performance in primary school and lower performance in secondary school is also consistent with a model suggesting that students have great incentives to perform well before the selection process begins (see Eisenkopf, 2007).

Additional results for boys and girls show interesting differences in achievement progress within countries. In nearly all countries girls progress more than boys. Figure 2 summarises gender differences in achievement progress by taking the average estimate from both comparisons or just the one comparison available. The difference in achievement progress is closest to zero in England, Scotland, Canada (with Nova Scotia and Quebec having the smallest differences), Hong Kong-China, Israel, Singapore, Romania, Denmark, the United States, the Netherlands, New Zealand and Belgium. Large differences in favour of girls are observed in Luxembourg, the Slovak Republic, Italy, Lithuania and Argentina. In these countries, the reading performance advantage of girls increases significantly between primary and secondary level. Both comparisons, between PIRLS 2001 and PISA 2000 and between PIRLS 2006 and PISA 2009, show similar differences in achievement progress between boys and girls, providing additional support for our methodology.

Figure 2. Gender difference in achievement progress (girls minus boys)



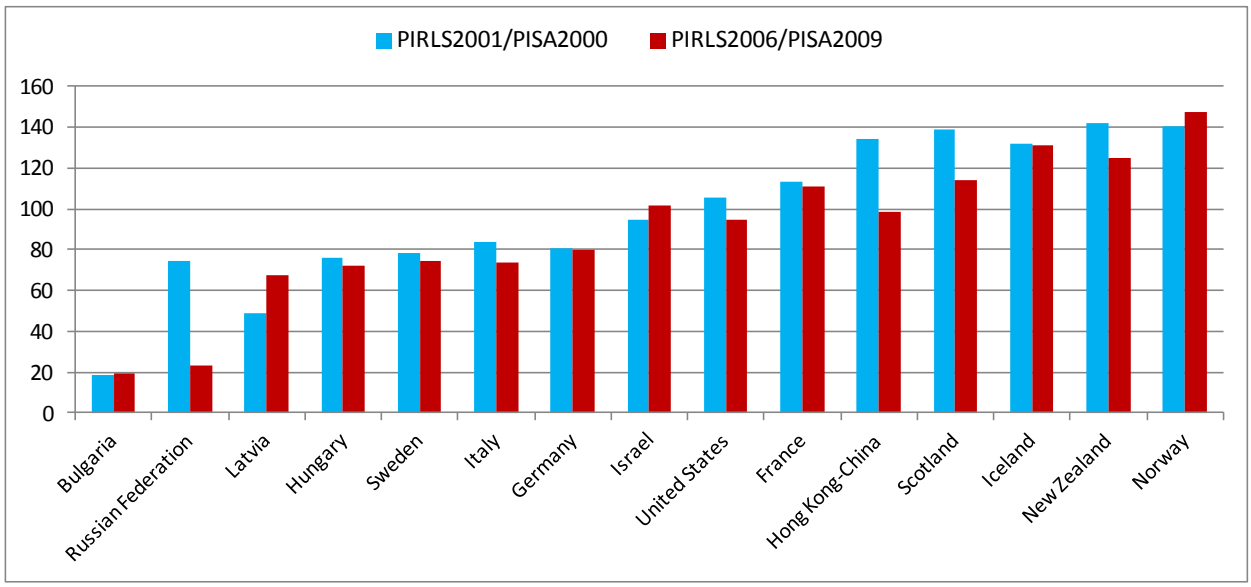
Note: Estimate shown on the figure represents average from both comparisons or only one estimate that is available.

There is not much difference between achievement progress estimates obtained for all students and those obtained separately for native students. Only in Qatar and the United States do native students show less achievement progress than the average for all students (there is a similar difference in Israel, but only when comparing PIRLS 2001 to PISA 2000). In Hong Kong-China, there is slightly greater achievement progress for native students, and that is confirmed in both comparisons. For other countries, the differences are negligible.

Results from the two comparisons can be analysed together to see if the estimates of achievement progress provide a consistent picture between the age of 10 and 15. Obviously, these comparisons are based on data from different student cohorts and from different years. Some discrepancies between results are expected, as student performance might improve or decline over time due to policy changes or other factors. However, the results should be similar in most countries as both comparisons aim to measure achievement progress in similar ways and in most cases, school systems remain unchanged.

In fact, Figure 3 shows that, for those countries with data available for both comparisons, the two comparisons give consistent estimates of achievement progress. The largest discrepancies are seen in the Russian Federation, where estimates based on PIRLS 2006 and PISA 2009 are much smaller than the estimates based on the earlier tests, and for Hong Kong-China, where the PIRLS 2001 and PISA 2000 comparison suggests greater achievement progress. Note, however, that the standard errors for these two countries are among the largest. Among all the countries considered, the link error is the largest in Hong Kong-China, which suggests that in this case some PIRLS and PISA items might measure different aspects of achievement.

Figure 3. Age- and gender-adjusted estimates of achievement progress for countries with data from both comparisons



Final adjustments were made by reweighting the data to balance important student characteristics across PIRLS and PISA. These results are reported in Tables A11 to A14 in the Appendix. Reweighted estimates are similar to those previously reported, with correlations around 0.96-0.97 between unadjusted and reweighted achievement progress estimates, and 0.98 between age/gender adjusted and reweighted estimates (see Table A18 in the Appendix). Reweighted estimates differ in a few countries, however. This suggests that distributions of background characteristics that are related to achievement progress differ across PIRLS and PISA in these countries, or that these characteristics were not measured in a comparable way (see Tables A19 and A20 for comparisons of the distribution of background characteristics before and after reweighting).

Although theoretically reweighted data could provide the most reliable comparisons, in our view, these results should be taken with caution. This is because of the limited reliability of background information provided by 10-year-old and 15-year-old students. While student age data are usually reliable, because they are easier to collect and check by survey organisers, background information on parents' education

or even immigrant status is far more uncertain. This is because these data come from student responses, and some 10-year-old or even 15-year-old students might not know their parents' level of education or their parents' place of birth. Moreover, surveys use different questionnaires, and even slightly different wording might reduce comparability. Nevertheless, these results might be useful as an additional check. For those countries that have very different progress estimates before and after balancing background characteristics, careful examinations of student samples are required before any meaningful interpretation of these results can be offered.

Achievement progress can be also measured by levels of proficiency. Tables A15 and A16 in the Appendix present results for the age- and gender-adjusted estimates at the 10th and 90th percentile of achievement distribution, while Figures A1 to A7 chart achievement progress across the whole performance spectrum for the PIRLS 2006 to PISA 2009 comparison. In many countries, achievement progress differs for students at the lowest and the highest proficiency levels. Several countries, including Macedonia, New Zealand, Scotland, Israel, England, Poland and Romania show greater achievement progress among students at the lower end of the proficiency scale. In these countries, achievement progress for students at the 10th percentile of the performance distribution was greater than for students at the 90th percentile. This can be interpreted either as a sign that effective policies are in place to help poorly performing students improve or as indication of a lack of good policies to help the best students to improve further.

In many countries, achievement progress is greater among the best students, with the largest differences found in Qatar, Belgium, Luxembourg, France, Sweden, the Netherlands, Germany and Austria. These countries may have policies that help the best students progress faster relative to poor performers. Interestingly, the Canadian provinces differ in terms of achievement progress among the lowest- and the best-performing students. Generally, achievement progress seems to be greater among lower-performing students in Canada. This is evident, for example, in Nova Scotia, where the lowest-performing students progress by 13 score points. But this is not true in Quebec, where the highest-performing students progress by 14 score points.

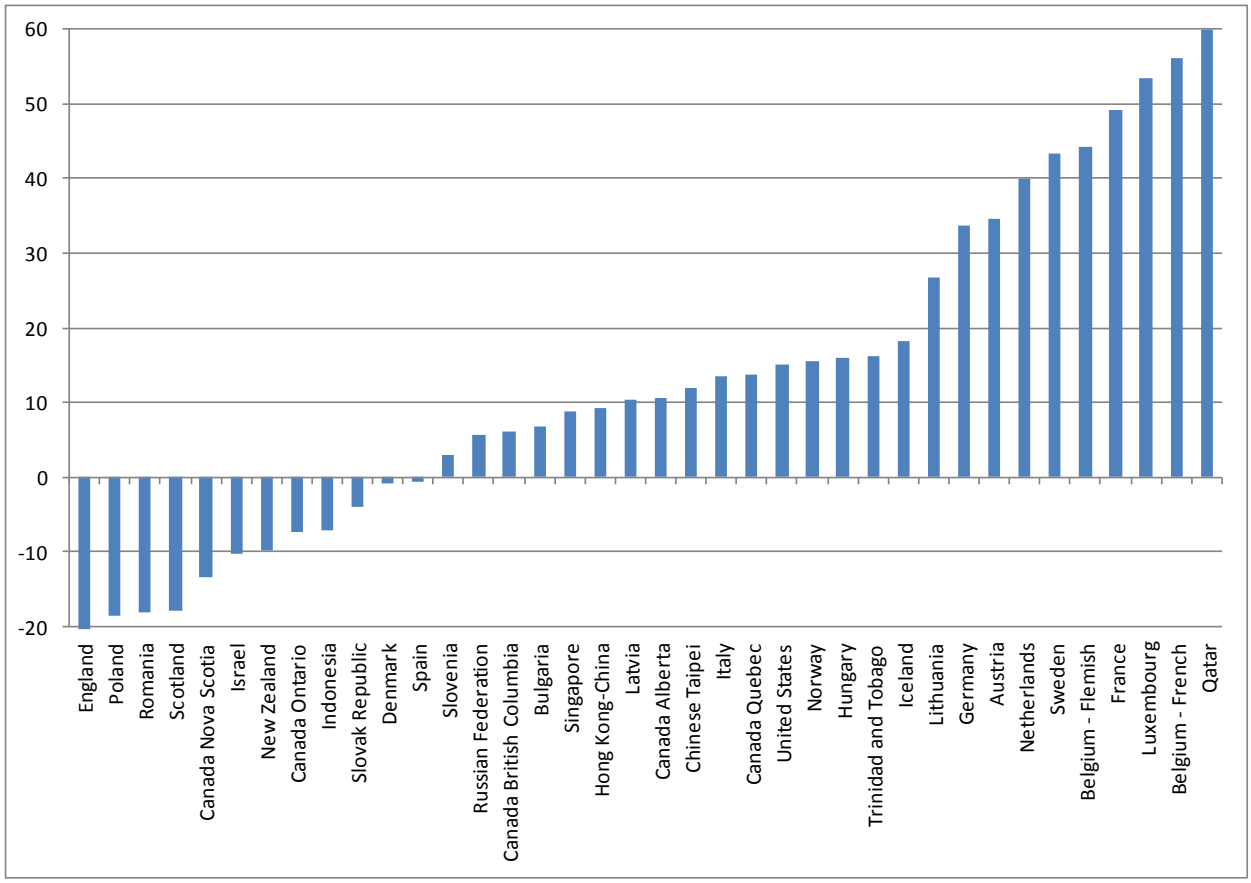
Measures of age- and gender-adjusted achievement progress at different percentiles help to evaluate how performance inequality evolves between primary and secondary education. Figure 4 shows changes in the gap in reading performance (the difference between the 90^{th} and 10^{th} percentiles) between PIRLS 2006 and PISA 2009. These differences capture the width of the distribution of student performance–in other words, they measure the performance gap between the highest- and the lowest-scoring students in each country. Changes in these differences show whether performance gaps widen or narrow relative to other countries. Additional data, including the comparison between PIRLS 2001 and PISA 2000, are presented in Table A17 in the Appendix.

Figure 4 shows that the gap in reading performance increased to large extent in countries like Qatar, Belgium, Luxembourg, France, Sweden, the Netherlands, Austria, Germany and Lithuania. In Qatar, Belgium, France and the Netherlands, this is due to greater achievement progress among the best-performing students compared to other countries. In the rest of the countries listed above, achievement progress was greater among the best-performing students when only students from the same country were compared. But when achievement progress was compared across countries, both low- and high-scoring students showed relatively little progress. Thus, not only did inequalities in educational outcomes increase in Luxembourg, Sweden, Austria, Germany and Lithuania, but achievement progress at all performance

levels was small, especially among the lowest-achieving students.

In several countries, the gap in reading performance narrowed between primary and secondary education. This is most evident in England, Poland, Romania and Scotland. However, only in Poland and Scotland do both poor and high performers show greater progress relative to students at similar performance levels in other countries, while within each country poor performers progress more. In England and Romania, the poorest-performing students remained at relatively similar levels compared to low-scoring students in other countries, but the best students show less achievement progress. Thus, while in Romania and England the reduction of the performance gap is due to less achievement progress among top performers, Poland and Scotland managed to narrow their achievement gaps while showing relatively great achievement progress among the best students.

Figure 4. Change in the reading performance gap (difference between 10th and 90th percentile in PIRLS 2006 and PISA 2009)



IV. Summary

This paper provides internationally comparable results on reading achievement progress between the ages of 10 and 15. The estimates were obtained by comparing individual results from PIRLS 2001 or PIRLS 2006 for 10-year-old students, to results from PISA 2000 or PISA 2009 for 15-year-old students. PIRLS and PISA are two international surveys of student achievement that, while different in some assumptions, still provide comparable assessments of reading. We adjust our estimates of achievement progress for differences in student age and we balance gender distribution by equally weighting boys and girls. We believe age must be taken into account to make valid comparisons because of the large differences in student ages found in PIRLS; gender imbalance could also bias the results because of large differences in reading achievement between boys and girls. We also provide results adjusted for remaining differences in selected background characteristics. Finally, our estimates of standard errors include a link error that is obtained via simulation with random draws of items taken to see if different sets of items produce different results. Thus, our results provide adjusted estimates of achievement progress that also account for a link error. We provide results for all students as well as for subpopulations defined by gender and immigrant background. We also provide results by proficiency levels and for changes in performance gaps between the lowest- and highest-performing students.

The results show remarkable consistency between the PIRLS 2001 to PISA 2000 comparison and the PIRLS 2006 to PISA 2009 comparison. In most cases, countries that saw great achievement progress in one comparison have similar results in the other. For example, Iceland, New Zealand and Norway show relatively greater progress than other countries in both comparisons. Students in Bulgaria progress less than those in other countries, while students in the United States maintain their standing in relative terms according to both comparisons. Across all countries, gender differences in progress estimates are similar in both comparisons.

While our results show that PIRLS-to-PISA comparisons provide stable results that can be used to draw conclusions about student progress in different countries, we also demonstrate the importance of accounting for an error in linking data from these two studies. We propose a method of obtaining link errors via random draws of items from all items available in both surveys. Our results suggest that there are non-negligible discrepancies in results obtained for different sets of items. However, link errors are no larger than they are in other international studies that measure achievement trends. Thus, while one needs to account for link errors, our results suggest that, for most countries, the conclusions would be qualitatively similar when taking different sets of items into consideration.

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Appendix

Table A1. Sample size, average reading performance and mean student age in countries participating in both PISA 2000 and PIRLS 2001

Country/Economy	PIRLS 2001			PISA 2000		
	no of obs.	*mean score*	*mean age*	*no of obs.*	*mean score*	*mean age*
Argentina	3300	351.6	10.2	3983	418.3	15.8
Bulgaria	3460	517.4	10.9	4657	430.4	15.6
Canada	8253	509.4	10.0	29687	534.3	15.8
Czech Rep.	3022	500.2	10.5	5365	491.6	15.7
France	3538	485.3	10.1	4673	504.7	15.8
Germany	7633	503.0	10.5	5073	484.0	15.7
Greece	2494	484.1	9.9	4672	473.8	15.7
Hong Kong-China	5050	488.8	10.2	4405	525.5	15.7
Hungary	4666	508.2	10.7	4887	480.0	15.7
Iceland	3676	469.2	9.7	3372	506.9	15.6
Israel	3973	464.8	10.0	4498	452.2	15.6
Italy	3502	505.0	9.8	4984	487.5	15.7
Latvia	3019	509.9	11.0	3893	458.1	15.7
Macedonia	3711	379.5	10.7	4510	372.5	15.6
Netherlands	4112	522.1	10.3	2503	531.9	15.6
New Zealand	2488	490.0	10.1	3667	528.8	15.7
Norway	3459	452.4	10.0	4147	505.3	15.7
Romania	3625	468.3	11.1	4829	427.9	14.7
Russian Fed.	4093	488.8	10.3	6701	461.8	15.7
Scotland	2717	489.1	9.8	2371	525.6	15.7
Sweden	6044	530.7	10.8	4416	516.3	15.7
United States	3763	506.8	10.2	3846	504.4	15.7

Source: Own calculations using PIRLS 2001 and PISA 2000 public datasets

Table A2. Numbers of items across 500 replications

	total item pool	mean	standard deviation	min	max
PISA 2009	131	65.71	6.02	49	83
PIRLS 2006	125	62.48	5.49	44	82
PISA 2000	129	64.11	6.00	44	87
PIRLS 2001	98	46.92	4.94	36	32

Table A3. Unadjusted reading achievement progress - PIRLS 2001 to PISA 2000

Cnt/Econ	All students		Boys		Girls		Natives		Native boys		Native girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
ARG	128.0	11.3	112.6	9.9	138.4	13.2	118.9	11.5	102.5	10.3	130.7	13.5
BGR	24.1	7.9	16.0	8.3	34.2	9.4	21.3	7.9	14.4	8.4	30.2	9.5
CAN	129.8	4.9	124.6	4.9	134.7	5.7	122.1	4.9	115.9	4.9	128.5	5.8
CZE	96.5	5.9	86.1	7.0	105.4	7.0	93.7	5.9	83.0	7.0	103.0	6.9
DEU	83.7	5.4	75.5	6.2	92.0	6.1	80.6	5.4	70.7	6.2	91.0	6.2
FRA	117.1	6.4	109.2	7.1	124.0	7.1	116.4	6.3	108.0	7.1	123.9	7.1
GRC	90.0	8.5	80.9	9.1	99.1	9.3	90.3	8.5	82.7	9.2	97.7	9.2
HKG	139.5	8.9	142.9	9.7	136.1	9.6	145.0	8.9	147.8	9.8	142.3	9.6
HUN	80.1	7.2	74.1	8.3	86.6	7.6	72.8	7.3	66.4	8.4	80.0	7.8
ISL	131.9	5.6	122.1	6.1	141.4	6.3	126.3	5.6	116.7	6.3	136.0	6.4
ISR	94.2	9.7	98.6	12.0	88.1	10.2	82.0	9.9	87.6	12.1	75.5	10.5
ITA	84.7	5.8	71.6	7.4	97.9	6.8	83.5	5.9	70.8	7.4	96.3	6.8
LVA	59.2	7.2	47.1	7.5	69.1	8.3	58.2	8.2	41.5	8.4	71.5	9.3
MKD	84.8	6.6	73.8	7.2	96.3	7.3	85.5	6.6	74.4	7.3	96.9	7.4
NOR	141.3	6.4	130.7	7.4	152.1	7.0	140.3	6.5	129.3	7.6	151.7	7.2
NZL	142.7	6.5	135.8	7.8	149.3	8.0	144.6	6.4	138.3	7.8	150.1	7.9
ROM	67.5	7.7	66.3	8.6	68.2	8.4	65.8	7.8	64.9	8.8	66.1	8.4
RUS	77.4	7.9	65.8	8.4	88.7	8.3	74.0	8.0	63.0	8.3	84.8	8.5
SCO	137.8	6.4	134.3	7.5	141.6	7.4	130.0	7.4	127.0	8.2	133.0	8.7
SWE	82.9	6.2	76.5	6.9	89.4	6.8	81.1	6.2	74.4	7.0	88.0	6.8
USA	107.0	9.2	101.0	11.1	112.4	9.1	96.1	9.3	89.5	11.3	101.9	9.1

Table A4. Unadjusted reading achievement progress - PIRLS 2006 to PISA 2009

Cnt/Prov/Econ	All students		Boys		Girls		Natives		Native boys		Native girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
AUT	73.8	5.4	64.9	6.4	82.0	6.3	75.5	5.3	65.6	6.4	84.9	6.2
BFL	106.0	5.1	101.2	5.5	111.2	6.2	107.7	5.1	103.1	5.6	112.6	6.3
BFR	137.2	5.9	131.5	7.4	143.3	6.4	141.2	5.8	136.3	7.1	146.3	6.6
BGR	32.0	8.8	20.8	9.9	44.6	8.7	31.9	8.8	20.3	9.9	44.7	8.6
CAN Alberta	104.1	6.2	96.8	6.8	111.0	7.1	104.0	6.3	96.9	6.8	110.5	7.1
CAN British Colu	100.4	5.8	92.3	7.0	109.3	6.4	102.4	6.0	95.5	7.3	109.6	6.7
CAN Nova Scotia	109.4	5.4	110.5	7.0	108.2	6.3	108.6	5.6	110.7	7.2	106.4	6.4
CAN Ontario	107.4	5.9	101.7	6.6	113.1	6.8	108.5	6.0	103.8	6.6	113.0	7.1
CAN Quebec	127.1	5.8	123.4	7.0	130.3	6.4	128.8	5.9	125.5	7.0	131.6	6.6
DEU	86.6	5.4	76.6	6.3	97.1	6.0	88.0	5.4	77.7	6.3	98.7	6.0
DNK	84.4	5.1	82.8	6.0	86.3	5.9	84.7	5.1	83.1	6.0	86.8	5.9
ENG	92.2	5.0	94.9	6.0	89.0	5.8	89.0	5.1	91.9	5.9	85.5	5.9
ESP	112.1	4.7	104.3	5.1	120.1	5.3	114.4	4.8	106.5	5.2	122.5	5.6
FRA	114.6	5.4	105.5	6.2	122.5	5.9	115.5	5.5	106.3	6.3	123.4	6.0
HKG	99.7	6.6	94.9	6.8	105.5	7.4	105.9	6.8	100.7	7.2	112.3	7.7
HUN	79.7	6.0	68.8	6.6	90.9	7.0	78.8	6.0	67.1	6.6	90.8	7.1
IND	133.3	7.6	126.9	7.9	139.2	7.9	131.8	7.6	125.9	7.8	137.0	8.0
ISL	130.5	5.3	124.0	6.0	136.6	5.8	130.4	5.4	123.6	6.1	136.7	5.9
ISR	101.9	5.6	93.0	6.7	109.8	6.5	102.3	5.7	92.9	6.9	110.9	6.5
ITA	72.6	4.7	59.3	5.4	86.6	5.4	74.4	4.7	60.9	5.6	88.7	5.3
LTU	75.0	5.1	63.4	5.7	86.7	5.7	75.0	5.1	63.4	5.7	86.5	5.7
LUX	53.4	3.9	41.0	4.6	66.1	4.5	53.5	4.1	40.5	4.8	66.8	4.8
LVA	83.5	5.2	78.9	5.9	86.6	6.2	86.5	5.6	83.2	6.2	88.0	6.7
NLD	97.5	7.0	93.6	7.5	101.4	7.3	97.9	6.9	94.1	7.5	101.8	7.2
NOR	146.8	5.7	139.2	6.3	154.9	6.5	147.8	5.8	139.8	6.4	156.4	6.6
NZL	125.2	4.6	121.6	5.6	129.0	5.2	127.5	4.7	124.6	5.9	130.5	5.5
POL	121.7	5.1	112.5	5.6	131.5	5.8	121.5	5.1	112.2	5.6	131.4	5.8
QAT	155.7	6.1	149.2	6.8	162.6	5.9	134.6	6.6	124.8	7.4	144.5	6.4
ROU	88.3	7.4	78.4	8.3	97.1	8.0	88.0	7.5	78.0	8.3	97.2	8.1
RUS	34.2	6.5	26.2	6.8	42.0	7.2	34.2	6.6	26.4	6.9	42.0	7.2
SCO	112.3	5.4	116.6	6.5	108.3	6.5	111.1	5.4	115.4	6.5	107.2	6.6
SGP	99.7	5.3	98.3	5.8	100.7	5.8	100.9	5.3	98.4	5.9	103.3	6.0
SVK	87.8	5.3	74.2	6.4	100.7	5.6	87.3	5.3	73.7	6.4	100.1	5.6
SVN	102.7	5.5	92.1	6.3	113.3	5.9	102.7	5.6	92.3	6.3	113.3	6.0
SWE	85.3	5.1	79.4	5.5	90.7	6.0	86.1	5.0	80.4	5.5	91.3	5.8
TAP	97.8	6.3	91.5	6.9	103.8	6.9	93.8	6.2	86.8	6.9	100.8	6.9
TTO	131.4	6.3	123.7	7.2	138.4	6.8	132.3	6.3	124.4	7.3	139.5	6.8
USA	97.2	6.2	96.0	7.0	98.8	6.6	94.9	6.3	93.9	7.2	96.6	6.7

Table A5. Unadjusted mean achievement (PIRLS 2001 and PISA 2000) and error components

Cnt/Econ	All students					Boys					Girls				
	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
ARG	301.1	4.4	429.1	9.0	5.2	293.8	4.7	406.4	6.8	5.3	308.3	5.2	446.7	10.9	5.4
BGR	411.3	3.9	435.4	4.6	5.2	398.3	5.1	414.2	4.5	4.8	423.6	4.0	457.8	6.0	6.1
CAN	399.5	2.6	529.3	1.5	3.8	389.9	2.9	514.5	1.8	3.6	409.3	3.1	544.0	1.7	4.5
CZE	394.4	2.9	490.9	2.1	4.8	387.8	3.5	473.9	3.6	5.0	401.4	3.8	506.8	2.6	5.2
DEU	402.5	2.0	486.2	2.3	4.4	395.3	2.5	470.9	3.1	4.7	409.7	2.5	501.8	3.1	4.6
FRA	386.1	3.1	503.2	2.7	4.9	380.6	3.8	489.7	3.4	5.0	392.0	3.9	516.0	2.8	5.2
GRC	384.3	3.5	474.2	4.6	6.3	376.7	4.1	457.6	5.6	6.0	391.9	4.1	491.1	4.3	7.1
HKG	383.2	3.7	522.7	2.9	7.5	373.6	4.3	516.5	4.6	7.3	392.8	3.8	528.9	3.5	8.0
HUN	401.9	2.7	482.0	3.9	5.4	393.9	3.4	468.0	5.1	5.7	409.6	2.9	496.2	4.3	5.6
ISL	371.3	1.5	503.2	1.5	5.1	361.9	2.2	484.0	2.3	5.2	380.9	2.3	522.3	2.1	5.5
ISR	365.4	3.0	459.6	7.9	4.8	354.5	3.9	453.1	10.3	4.8	376.1	3.7	464.2	7.9	5.3
ITA	402.4	2.9	487.0	2.8	4.2	398.0	3.5	469.7	5.0	4.2	407.1	3.2	504.9	3.6	4.8
LVA	400.0	2.8	459.2	4.9	4.5	387.0	3.3	434.1	5.0	4.5	414.1	3.8	483.2	5.1	5.3
MKD	299.4	3.8	384.2	1.2	5.2	289.6	4.1	363.4	2.0	5.6	309.6	4.6	405.9	1.9	5.4
NOR	362.5	3.0	503.8	2.6	5.0	354.1	3.9	484.8	3.5	5.2	371.5	3.7	523.7	2.7	5.3
NZL	381.8	4.3	524.5	2.6	4.1	368.1	5.1	503.9	4.0	4.3	396.1	5.4	545.4	3.7	4.6
ROM	364.1	5.0	431.6	3.1	5.0	358.2	5.5	424.5	4.3	5.1	369.8	5.1	438.1	4.0	5.3
RUS	384.6	4.3	462.0	3.9	5.3	378.5	4.7	444.3	4.4	5.4	391.0	4.6	479.7	3.9	5.6
SCO	380.6	4.0	518.4	2.8	4.1	372.1	5.2	506.4	3.3	4.2	388.5	4.5	530.2	3.8	4.5
SWE	429.1	2.4	512.0	2.2	5.3	417.8	3.0	494.3	2.8	5.5	440.9	3.0	530.3	2.6	5.5
USA	393.8	4.7	500.8	6.5	4.5	385.3	5.9	486.3	8.1	4.6	402.0	5.2	514.4	5.6	4.9
Cnt/Econ	Natives					Native boys					Native girls				
	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
ARG	310.2	4.9	429.1	9.1	5.1	303.8	5.6	406.3	6.8	5.3	316.0	5.6	446.7	11.0	5.5
BGR	414.3	3.9	435.6	4.5	5.2	400.5	5.2	414.9	4.4	4.8	427.1	4.0	457.3	6.0	6.1
CAN	409.7	2.6	531.8	1.5	3.9	400.8	2.6	516.7	1.7	3.8	418.4	3.2	546.9	1.6	4.6
CZE	397.6	2.8	491.3	2.1	4.8	391.7	3.4	474.7	3.6	5.0	403.9	3.7	506.9	2.6	5.2
DEU	414.4	2.1	494.9	2.2	4.5	408.3	2.5	479.0	3.1	4.8	420.1	2.6	511.1	2.9	4.8
FRA	388.3	2.9	504.7	2.6	4.9	383.3	3.7	491.3	3.4	5.1	393.6	4.0	517.5	2.7	5.2
GRC	387.3	3.7	477.6	4.3	6.3	378.5	4.4	461.3	5.4	6.1	396.1	4.4	493.8	4.1	7.0
HKG	383.2	3.8	528.2	2.6	7.6	375.3	4.6	523.1	4.5	7.4	391.1	4.0	533.3	3.4	8.1
HUN	409.0	2.8	481.8	3.9	5.5	401.2	3.4	467.6	5.1	5.7	416.3	3.0	496.3	4.4	5.7
ISL	377.2	1.5	503.5	1.6	5.1	368.2	2.6	485.0	2.3	5.2	386.0	2.3	522.0	2.2	5.5
ISR	378.0	3.1	460.0	8.0	4.9	367.7	4.0	455.3	10.4	4.8	387.7	4.0	463.3	8.1	5.4
ITA	404.4	3.0	488.0	2.8	4.2	399.9	3.6	470.8	4.9	4.2	409.3	3.3	505.6	3.6	4.8
LVA	402.2	2.8	460.3	6.2	4.7	389.4	3.3	430.9	6.2	4.7	416.0	3.8	487.5	6.5	5.4
MKD	301.6	3.9	387.1	1.3	5.2	291.8	4.2	366.2	2.1	5.6	311.6	4.7	408.5	1.9	5.4
NOR	365.9	3.2	506.3	2.6	5.0	357.8	4.4	487.2	3.5	5.2	374.6	3.9	526.3	2.7	5.4
NZL	383.5	4.0	528.1	2.7	4.2	368.1	4.8	506.4	4.2	4.5	399.3	5.2	549.4	3.8	4.7
ROM	365.9	5.1	431.7	3.1	5.0	359.7	5.7	424.6	4.3	5.1	372.0	5.1	438.1	4.0	5.3
RUS	387.5	4.3	461.5	4.1	5.4	380.6	4.4	443.6	4.5	5.4	394.6	4.9	479.4	4.0	5.8
SCO	389.7	5.5	519.7	2.8	4.2	380.1	6.2	507.1	3.2	4.3	398.9	6.4	531.9	3.8	4.6
SWE	435.4	2.3	516.5	2.0	5.4	424.1	3.1	498.5	2.7	5.7	446.9	2.8	534.9	2.5	5.6
USA	406.9	4.6	503.0	6.5	4.7	399.3	6.1	488.9	8.2	4.9	414.2	5.1	516.1	5.6	5.1

Table A6 – Part I. Unadjusted mean achievement (PIRLS 2006 and PISA 2009) and error components

Cnt/Prov/Econ	All students					Boys					Girls				
	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
AUT	398.7	2.6	472.5	2.6	4.0	392.6	3.2	457.5	3.4	4.4	404.9	3.0	486.8	3.7	4.1
BFL	408.6	2.4	514.6	2.0	4.0	404.2	2.7	505.4	2.7	3.9	413.0	3.1	524.3	3.0	4.4
BFR	353.9	2.8	491.1	3.6	3.7	351.0	3.4	482.5	5.3	3.9	356.8	3.2	500.1	4.0	3.9
BGR	409.8	4.8	441.8	5.6	4.9	399.6	5.5	420.4	6.3	5.2	420.2	5.1	464.8	4.9	5.1
CALB	421.6	3.0	525.7	4.0	3.6	416.9	3.5	513.7	4.6	3.7	426.6	3.1	537.6	5.0	4.0
CBCL	419.2	3.0	519.5	3.7	3.3	414.0	3.6	506.3	5.1	3.2	424.3	3.4	533.6	3.6	4.0
CNSC	402.1	2.4	511.5	3.4	3.5	390.9	3.3	501.4	5.1	3.4	413.7	2.9	521.9	3.7	4.2
CONT	416.7	3.5	524.1	2.7	3.9	410.2	4.3	511.8	3.5	3.6	423.6	3.9	536.6	3.1	4.7
CQUE	391.4	3.1	518.5	2.8	4.1	383.7	4.2	507.1	3.7	4.3	399.3	3.4	529.6	3.3	4.3
DEU	409.5	2.5	496.1	2.5	4.1	405.1	3.0	481.7	3.3	4.4	414.0	3.1	511.1	3.0	4.1
DNK	407.1	2.6	491.5	1.9	4.0	398.8	3.2	481.6	2.5	4.4	414.9	3.5	501.2	2.4	4.1
ENG	399.4	2.7	491.5	2.3	3.6	388.6	3.0	483.5	3.7	3.6	410.3	3.1	499.3	2.9	3.9
ESP	369.1	2.8	481.2	1.8	3.2	366.9	3.2	471.2	2.2	3.3	371.4	3.2	491.5	2.1	3.7
FRA	379.7	2.4	494.3	2.9	3.9	374.1	2.9	479.6	3.6	4.1	385.6	2.9	508.1	3.2	4.0
HKG	428.1	2.8	527.8	2.0	5.6	422.0	3.2	516.9	3.1	5.2	434.4	3.0	539.9	2.7	6.3
HUN	412.6	3.3	492.3	3.0	4.0	408.9	3.5	477.6	3.8	4.2	416.3	4.2	507.2	3.5	4.4
IND	274.3	3.1	407.6	3.2	6.1	267.3	3.7	394.2	3.2	6.1	281.5	3.3	420.6	3.4	6.3
ISL	367.1	1.6	497.6	1.8	4.7	356.9	2.1	480.9	2.4	5.0	377.4	2.2	514.0	2.4	4.8
ISR	373.0	3.3	475.0	3.0	3.4	366.4	3.7	459.4	4.3	3.6	380.2	4.3	489.9	3.1	3.7
ITA	413.0	3.1	485.6	1.4	3.2	409.5	3.7	468.8	2.1	3.4	416.8	3.6	503.5	1.7	3.5
LTU	396.2	2.3	471.2	2.2	4.0	385.1	2.8	448.5	2.7	4.2	407.8	2.7	494.5	2.5	4.4
LUX	420.5	1.2	473.9	1.2	3.6	418.8	1.8	459.8	2.1	3.7	422.3	1.8	488.4	1.5	3.8
LVA	401.1	2.5	484.6	2.6	3.8	387.6	3.0	466.5	3.3	3.9	415.7	3.3	502.3	2.9	4.4
NLD	407.6	1.9	505.1	4.7	4.8	403.1	2.6	496.7	4.8	5.1	412.0	2.3	513.4	4.9	4.9
NOR	353.5	2.8	500.3	2.2	4.5	343.3	3.1	482.5	2.8	4.7	363.9	3.6	518.8	2.6	4.7
NZL	390.8	2.3	516.0	2.2	3.2	378.1	3.3	499.7	3.2	3.2	404.0	2.6	533.0	2.6	3.7
POL	378.0	2.4	499.7	2.4	3.8	368.0	3.0	480.5	2.6	4.0	387.4	3.0	518.9	2.9	4.1
QAT	236.4	1.1	392.1	0.9	5.9	226.6	1.5	375.8	1.4	6.5	246.4	1.7	409.0	1.2	5.5
ROU	348.5	4.9	436.7	3.6	4.4	342.7	5.5	421.1	4.1	4.7	354.7	5.3	451.8	4.0	4.5
RUS	427.7	3.9	461.9	2.9	4.3	418.9	4.1	445.1	3.3	4.3	436.3	4.3	478.4	3.2	4.8
SCO	386.0	3.0	498.2	2.7	3.5	374.0	3.4	490.6	4.1	3.7	397.6	4.1	505.9	3.1	3.9
SGP	420.2	3.2	519.9	1.3	4.0	411.0	3.8	509.3	1.9	3.9	430.1	3.4	530.9	1.8	4.3
SVK	390.3	3.1	478.1	2.5	3.5	383.8	3.8	458.0	3.5	3.8	397.1	3.1	497.9	2.8	3.7
SVN	379.4	2.6	482.1	1.2	4.8	369.3	3.3	461.4	1.8	5.1	390.2	2.8	503.5	1.8	4.9
SWE	410.0	2.6	495.3	2.6	3.6	399.2	2.9	478.6	2.9	3.7	421.8	3.2	512.4	3.1	4.0
TAP	394.7	2.3	492.5	2.3	5.3	388.3	2.8	479.7	3.5	5.3	401.8	2.4	505.6	3.3	5.6
TTO	298.4	4.1	429.9	1.5	4.5	285.5	4.7	409.2	2.2	5.1	311.7	4.8	450.1	2.0	4.4
USA	399.9	3.9	497.0	3.3	3.5	393.9	4.6	489.8	4.0	3.5	405.8	4.1	504.6	3.4	3.9

Table A6 – Part II. Unadjusted mean achievement (PIRLS 2006 and PISA 2009) and error components

Cnt/Prov/Econ	Natives					Native boys					Native girls				
	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
AUT	400.7	2.4	476.2	2.5	4.0	394.4	3.0	460.0	3.5	4.4	407.0	3.0	491.9	3.4	4.1
BFL	409.9	2.3	517.5	2.1	4.1	405.9	2.7	509.0	2.9	4.0	413.9	3.2	526.5	3.1	4.5
BFR	355.7	2.9	496.9	3.4	3.7	353.2	3.4	489.5	4.8	4.0	358.1	3.3	504.4	4.1	4.0
BGR	410.6	4.7	442.5	5.6	4.9	400.8	5.5	421.1	6.4	5.2	420.6	5.0	465.3	4.9	5.1
CALB	422.5	2.8	526.5	4.2	3.7	418.0	3.3	514.9	4.7	3.8	427.4	3.1	537.9	5.0	4.0
CBCL	418.0	3.0	520.4	3.9	3.4	413.1	3.7	508.6	5.3	3.3	422.9	3.5	532.5	3.8	4.2
CNSC	402.4	2.4	511.0	3.6	3.5	390.8	3.4	501.5	5.3	3.5	414.4	2.9	520.8	3.8	4.2
CONT	416.6	3.6	525.1	2.6	4.0	409.2	4.3	513.0	3.5	3.6	424.3	4.1	537.2	3.0	4.9
CQUE	392.6	3.2	521.4	2.8	4.1	384.6	4.2	510.1	3.4	4.4	401.0	3.5	532.5	3.4	4.4
DEU	411.0	2.4	498.9	2.5	4.1	406.7	3.0	484.3	3.3	4.4	415.5	3.1	514.2	3.0	4.2
DNK	408.6	2.5	493.3	1.9	4.0	400.2	3.3	483.3	2.5	4.4	416.4	3.5	503.1	2.4	4.1
ENG	404.3	2.6	493.3	2.3	3.7	393.3	2.9	485.2	3.6	3.7	415.5	3.3	501.0	2.9	4.0
ESP	372.0	3.0	486.3	1.9	3.3	370.0	3.3	476.5	2.3	3.3	374.1	3.5	496.5	2.2	3.7
FRA	380.7	2.5	496.2	3.0	3.9	375.1	3.1	481.5	3.7	4.1	386.7	3.0	510.0	3.3	4.1
HKG	426.7	3.0	532.6	2.2	5.7	421.1	3.5	521.7	3.5	5.3	432.6	3.2	544.9	2.9	6.4
HUN	413.2	3.3	492.0	3.0	4.0	409.7	3.5	476.9	3.8	4.2	416.5	4.2	507.4	3.6	4.4
IND	276.1	3.2	407.9	3.2	6.1	268.6	3.7	394.5	3.2	6.1	284.0	3.5	421.0	3.4	6.3
ISL	368.2	1.7	498.6	1.9	4.7	357.9	2.3	481.6	2.5	5.1	378.4	2.3	515.1	2.5	4.9
ISR	373.6	3.4	475.8	3.0	3.4	367.2	3.9	460.0	4.5	3.5	380.5	4.4	491.4	3.0	3.8
ITA	414.5	3.1	489.0	1.4	3.3	411.0	3.8	471.9	2.1	3.4	418.3	3.4	507.0	1.8	3.6
LTU	396.3	2.3	471.3	2.2	4.0	385.2	2.8	448.6	2.7	4.2	408.0	2.6	494.6	2.5	4.4
LUX	423.9	1.2	477.4	1.4	3.7	423.1	1.8	463.6	2.1	3.8	424.8	2.0	491.5	2.0	4.0
LVA	398.0	2.9	484.5	2.6	4.0	383.4	3.5	466.7	3.3	4.0	413.8	3.9	501.9	2.9	4.6
NLD	408.8	1.9	506.8	4.6	4.8	404.4	2.7	498.5	4.9	5.1	413.1	2.4	515.0	4.7	4.9
NOR	354.3	2.9	502.1	2.2	4.5	344.3	3.2	484.1	2.8	4.7	364.7	3.7	521.1	2.7	4.8
NZL	388.1	2.5	515.6	2.2	3.3	374.1	3.7	498.7	3.3	3.3	402.5	2.9	533.0	2.7	3.8
POL	378.1	2.4	499.6	2.4	3.8	368.2	3.0	480.4	2.6	4.0	387.5	3.0	518.9	2.9	4.1
QAT	232.7	1.1	367.3	1.3	6.4	223.3	1.6	348.1	1.6	7.1	242.0	1.7	386.6	1.6	5.9
ROU	348.7	4.9	436.7	3.6	4.4	343.1	5.5	421.1	4.1	4.7	354.6	5.4	451.8	4.0	4.5
RUS	428.3	3.9	462.4	3.0	4.3	419.2	4.3	445.6	3.4	4.3	436.9	4.2	479.0	3.3	4.8
SCO	387.4	3.0	498.5	2.7	3.6	375.5	3.5	490.8	4.0	3.7	399.0	4.1	506.3	3.2	4.0
SGP	419.6	3.3	520.6	1.4	4.0	410.5	3.9	508.9	2.0	3.9	429.5	3.5	532.8	2.1	4.4
SVK	390.9	3.1	478.2	2.5	3.5	384.4	3.8	458.1	3.4	3.8	397.8	3.1	497.9	2.8	3.7
SVN	380.5	2.6	483.2	1.2	4.8	370.5	3.3	462.8	1.8	5.1	391.2	2.8	504.4	1.9	4.9
SWE	412.3	2.4	498.4	2.5	3.6	401.8	2.8	482.3	3.0	3.7	423.9	3.0	515.2	3.0	4.1
TAP	398.6	2.2	492.4	2.3	5.4	393.1	2.6	479.9	3.5	5.3	404.5	2.4	505.2	3.2	5.7
TTO	296.8	4.0	429.1	1.5	4.6	283.7	4.6	408.0	2.3	5.1	310.2	4.8	449.7	1.9	4.5
USA	402.9	4.1	497.9	3.3	3.5	397.1	4.7	491.1	4.2	3.5	408.5	4.2	505.1	3.4	4.0

Table A7. Age- and gender-adjusted reading achievement progress - PIRLS 2001 to PISA 2000

Cnt/Econ	All students		Boys		Girls		Natives		Native boys		Native girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
ARG	119.9	10.2	107.0	9.6	132.4	13.1	110.2	10.4	96.6	10.0	123.8	13.3
BGR	18.9	7.9	10.1	8.4	28.5	9.4	14.9	8.0	7.9	8.6	22.8	9.4
CAN	127.5	4.8	122.2	5.0	132.2	5.8	119.6	4.9	113.2	5.0	125.9	5.8
CZE	93.6	6.0	84.2	6.8	103.2	7.0	90.4	6.0	80.7	6.9	100.4	6.9
DEU	80.5	5.3	71.7	6.2	89.6	6.1	77.6	5.4	67.2	6.2	88.4	6.2
FRA	113.6	6.3	105.7	7.1	121.2	7.1	112.7	6.2	104.2	7.1	120.9	7.1
GRC	89.0	8.5	80.2	9.1	97.1	9.3	89.5	8.4	82.3	9.2	95.7	9.3
HKG	134.5	8.9	138.6	9.7	130.2	9.6	143.5	8.9	146.4	9.9	140.1	9.6
HUN	75.8	7.2	68.9	8.4	83.1	7.6	68.2	7.2	61.1	8.4	75.9	7.7
ISL	132.1	5.6	123.3	6.1	139.9	6.5	126.5	5.6	117.9	6.3	134.4	6.5
ISR	94.7	9.8	100.2	12.0	88.4	10.2	82.8	10.0	89.3	12.1	75.8	10.5
ITA	83.5	5.8	70.6	7.3	95.7	6.9	82.3	5.9	69.6	7.4	94.1	7.0
LVA	49.1	6.9	37.6	7.5	61.6	8.3	46.6	7.8	31.0	8.4	62.2	9.3
MKD	83.6	6.6	72.9	7.1	94.6	7.4	83.7	6.7	73.2	7.3	94.3	7.5
NOR	140.6	6.3	129.8	7.4	150.8	7.0	139.5	6.5	128.1	7.6	150.5	7.3
NZL	142.2	6.4	135.7	7.8	148.3	8.0	143.9	6.3	137.8	7.7	149.0	7.9
ROM	85.8	8.7	88.4	10.4	81.7	9.9	82.2	8.9	86.3	10.7	76.2	9.8
RUS	74.3	7.9	62.7	8.5	85.7	8.3	70.5	8.0	59.5	8.4	81.2	8.5
SCO	138.8	6.5	135.9	7.6	140.7	7.6	131.1	7.7	128.7	8.5	132.2	9.1
SWE	78.0	6.3	71.1	7.0	85.5	6.8	75.4	6.3	68.4	7.1	83.1	6.9
USA	105.7	9.2	99.9	11.0	111.3	9.1	94.6	9.2	88.3	11.2	100.6	9.1

Table A8. Age- and gender-adjusted reading achievement progress - PIRLS 2006 to PISA 2009

Cnt/Prov/Econ	All students		Boys		Girls		Natives		Native boys		Native girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
AUT	69.3	5.3	59.8	6.3	79.0	6.2	71.1	5.2	60.8	6.3	81.8	6.1
BFL	103.8	5.0	98.0	5.5	109.3	6.2	105.4	5.1	100.2	5.6	110.2	6.3
BFR	134.5	5.8	128.0	7.4	140.6	6.4	138.3	5.8	132.8	7.1	143.2	6.6
BGR	19.2	8.6	6.9	9.8	32.4	8.7	18.9	8.6	6.5	9.9	32.2	8.7
CAN Alberta	103.0	6.1	95.1	6.8	110.4	7.1	102.5	6.2	95.0	6.8	109.4	7.2
CAN British Colu	100.4	5.9	91.3	7.0	109.0	6.5	102.1	6.0	94.5	7.3	108.6	6.7
CAN Nova Scotia	108.5	5.4	108.9	6.9	107.9	6.2	107.5	5.6	109.1	7.2	105.5	6.3
CAN Ontario	106.7	5.9	100.4	6.7	112.4	6.8	107.2	5.9	102.2	6.7	111.6	7.0
CAN Quebec	125.5	5.8	121.5	7.0	129.4	6.4	127.1	5.9	123.5	7.0	130.2	6.7
DEU	80.0	5.3	68.6	6.2	91.7	5.9	81.6	5.3	70.0	6.3	93.5	5.9
DNK	72.5	5.2	69.1	6.0	76.8	6.0	73.1	5.1	70.0	6.1	77.3	6.0
ENG	90.6	5.0	93.0	5.9	88.3	5.8	87.4	5.1	90.2	5.9	84.7	6.0
ESP	110.5	4.6	101.8	5.0	118.9	5.3	112.4	4.8	103.8	5.2	120.6	5.6
FRA	111.1	5.4	101.9	6.2	120.0	5.9	111.7	5.5	102.6	6.3	120.4	6.0
HKG	98.9	6.6	92.9	6.9	104.5	7.5	106.0	6.8	99.7	7.3	111.9	7.7
HUN	72.1	5.9	59.9	6.5	85.0	7.0	71.3	6.0	58.6	6.6	84.7	7.0
IND	123.1	7.3	115.3	7.6	131.0	7.7	121.0	7.3	114.0	7.5	128.0	7.8
ISL	131.4	5.3	124.6	6.0	137.6	5.8	131.0	5.4	124.1	6.2	137.1	5.9
ISR	101.7	5.6	92.7	6.7	110.4	6.5	102.0	5.7	92.7	6.9	111.3	6.5
ITA	73.6	4.7	59.5	5.5	87.1	5.4	75.2	4.7	61.1	5.6	88.6	5.4
LTU	65.6	5.1	52.9	5.8	79.1	5.7	65.5	5.1	53.0	5.8	78.6	5.7
LUX	23.6	4.2	9.8	5.0	39.2	4.9	25.1	4.4	11.0	5.1	41.0	5.3
LVA	67.8	5.3	62.4	5.9	74.4	6.2	69.7	5.7	65.8	6.3	74.7	6.8
NLD	94.9	6.9	90.4	7.4	99.6	7.2	95.5	6.8	91.0	7.5	99.9	7.2
NOR	147.2	5.8	138.8	6.4	155.1	6.6	147.8	5.9	139.2	6.5	155.9	6.7
NZL	125.1	4.5	120.8	5.6	129.1	5.3	127.2	4.7	123.9	5.9	130.2	5.5
POL	123.1	5.1	112.9	5.7	132.8	5.9	122.6	5.1	112.6	5.6	132.1	5.9
QAT	153.8	6.0	146.4	6.8	160.6	5.9	132.3	6.6	121.9	7.4	141.7	6.4
ROU	74.1	7.1	64.9	8.0	84.5	7.9	73.8	7.1	64.6	8.0	84.2	8.0
RUS	22.9	6.5	14.1	6.8	32.4	7.2	22.9	6.5	14.6	6.9	32.1	7.2
SCO	113.7	5.4	117.4	6.5	109.6	6.5	112.4	5.4	116.1	6.5	108.1	6.6
SGP	95.7	5.3	93.8	5.8	97.9	5.8	98.4	5.4	95.8	5.9	101.4	6.1
SVK	83.7	5.2	69.8	6.3	97.8	5.5	83.2	5.2	69.6	6.3	96.9	5.5
SVN	103.8	5.5	92.6	6.3	114.4	6.0	103.5	5.5	92.7	6.3	113.9	6.0
SWE	74.2	5.1	67.9	5.5	81.4	5.9	75.2	5.0	69.4	5.5	82.0	5.8
TAP	97.4	6.2	90.7	7.0	103.9	6.9	93.3	6.2	86.0	6.9	100.5	6.9
TTO	125.3	6.0	116.0	6.9	134.4	6.6	125.7	6.0	116.3	6.9	134.9	6.6
USA	94.8	6.1	92.4	6.9	97.0	6.5	92.4	6.2	90.4	7.1	94.5	6.6

Table A9 – Part I. Age- and gender-adjusted mean achievement (PIRLS 2001 and PISA 2000) and error components

Cnt/ Econ	All students					Boys					Girls				
	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
ARG	305.7	4.3	425.6	7.7	5.1	298.0	4.6	405.0	6.5	5.3	313.7	5.1	446.1	10.8	5.4
BGR	418.9	3.9	437.8	4.6	5.2	406.2	5.2	416.3	4.5	4.8	430.6	3.9	459.1	5.9	6.1
CAN	400.6	2.6	528.1	1.5	3.8	390.6	2.9	512.8	1.9	3.6	411.1	3.2	543.3	1.7	4.5
CZE	397.5	2.9	491.1	2.2	4.8	390.8	3.4	475.0	3.3	5.0	403.9	3.8	507.1	2.6	5.2
DEU	406.0	1.9	486.5	2.2	4.4	399.2	2.4	470.9	3.1	4.7	412.5	2.5	502.1	3.1	4.6
FRA	388.0	3.1	501.6	2.5	4.9	382.1	3.8	487.8	3.4	5.0	394.1	4.0	515.3	2.7	5.2
GRC	385.6	3.4	474.6	4.4	6.3	377.5	4.1	457.7	5.6	6.0	394.2	4.0	491.3	4.3	7.1
HKG	388.2	3.7	522.7	2.9	7.5	377.8	4.4	516.3	4.7	7.3	398.9	3.8	529.1	3.5	8.1
HUN	406.4	2.6	482.1	3.9	5.4	398.9	3.5	467.8	5.1	5.7	413.3	2.9	496.4	4.3	5.6
ISL	372.6	1.7	504.7	1.5	5.1	362.5	2.3	485.8	2.2	5.2	383.5	2.6	523.4	2.1	5.5
ISR	366.1	3.0	460.8	8.1	4.7	355.1	4.0	455.3	10.2	4.8	377.6	3.8	466.0	7.8	5.3
ITA	403.6	3.0	487.1	2.7	4.2	398.6	3.5	469.2	4.9	4.2	409.3	3.5	505.0	3.6	4.8
LVA	409.7	2.8	458.7	4.3	4.6	396.5	3.4	434.1	4.9	4.5	421.7	3.8	483.3	5.0	5.3
MKD	303.5	3.9	387.0	1.2	5.2	293.3	4.1	366.2	1.9	5.5	313.1	4.8	407.7	1.9	5.3
NOR	363.4	3.0	504.0	2.5	5.0	354.4	3.9	484.2	3.5	5.2	372.8	3.7	523.7	2.6	5.3
NZL	382.8	4.4	525.0	2.3	4.1	368.5	5.1	504.1	4.0	4.3	397.4	5.4	545.7	3.7	4.5
ROM	374.1	5.1	459.9	5.1	5.0	367.9	5.8	456.2	7.0	5.1	379.2	5.3	460.9	6.5	5.3
RUS	387.9	4.4	462.2	3.9	5.3	381.5	4.8	444.2	4.4	5.4	394.4	4.6	480.0	3.9	5.7
SCO	381.3	4.3	520.1	2.7	4.1	372.5	5.3	508.4	3.3	4.2	391.0	4.8	531.7	3.8	4.5
SWE	434.2	2.5	512.2	2.2	5.4	422.7	3.2	493.8	2.7	5.6	444.9	3.1	530.4	2.6	5.5
USA	395.2	4.7	500.9	6.5	4.5	386.9	5.9	486.9	8.0	4.6	403.6	5.2	514.9	5.6	4.9

Table A9 – Part II. Age- and gender-adjusted mean achievement (PIRLS 2001 and PISA 2000) and error components

Cnt/ Econ	Natives					Native boys					Native girls				
	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
ARG	315.1	4.8	425.4	7.8	5.1	308.0	5.5	404.6	6.5	5.3	322.2	5.3	446.1	10.9	5.4
BGR	423.0	4.0	437.9	4.5	5.3	409.1	5.6	416.9	4.4	4.8	435.8	3.9	458.5	5.9	6.2
CAN	410.8	2.5	530.4	1.5	3.9	401.4	2.7	514.6	1.9	3.7	420.2	3.2	546.1	1.7	4.6
CZE	400.9	2.8	491.3	2.2	4.8	394.9	3.3	475.5	3.3	5.0	406.6	3.8	507.0	2.6	5.2
DEU	417.6	2.1	495.2	2.1	4.5	411.7	2.5	478.9	3.1	4.8	423.0	2.7	511.4	3.0	4.8
FRA	390.2	2.9	503.0	2.5	5.0	384.8	3.7	489.0	3.4	5.1	395.8	4.0	516.7	2.7	5.2
GRC	388.3	3.7	477.7	4.2	6.4	378.8	4.4	461.1	5.4	6.0	398.2	4.4	493.9	4.0	7.1
HKG	384.7	3.8	528.2	2.6	7.6	376.4	4.8	522.8	4.5	7.4	393.5	3.9	533.5	3.4	8.1
HUN	413.7	2.6	481.8	3.9	5.5	406.1	3.5	467.2	5.1	5.8	420.5	2.8	496.4	4.3	5.7
ISL	378.4	1.7	504.9	1.6	5.1	368.7	2.6	486.6	2.3	5.2	388.6	2.6	523.0	2.2	5.5
ISR	378.6	3.1	461.5	8.2	4.8	368.2	4.0	457.5	10.4	4.8	389.2	4.1	465.0	8.0	5.4
ITA	405.6	3.0	487.9	2.7	4.2	400.4	3.7	470.1	4.9	4.2	411.5	3.6	505.6	3.6	4.8
LVA	412.9	2.8	459.5	5.6	4.7	399.5	3.5	430.4	6.1	4.6	425.2	4.0	487.4	6.4	5.5
MKD	306.0	4.0	389.8	1.3	5.2	295.6	4.3	368.9	2.0	5.5	315.8	4.9	410.1	2.0	5.3
NOR	366.8	3.2	506.3	2.5	5.0	358.2	4.3	486.3	3.5	5.2	375.7	4.0	526.2	2.7	5.4
NZL	384.5	4.0	528.4	2.4	4.2	368.5	4.7	506.3	4.1	4.5	400.7	5.1	549.7	3.8	4.7
ROM	377.3	5.3	459.5	5.2	5.0	370.1	6.1	456.4	7.1	5.0	383.5	5.3	459.6	6.3	5.4
RUS	391.0	4.4	461.5	4.0	5.4	383.8	4.6	443.2	4.5	5.4	398.4	4.9	479.6	4.0	5.8
SCO	390.4	5.8	521.4	2.7	4.2	380.4	6.5	509.1	3.2	4.3	401.2	6.9	533.3	3.8	4.6
SWE	441.1	2.3	516.5	2.0	5.5	429.3	3.2	497.7	2.7	5.7	451.8	3.0	534.9	2.5	5.7
USA	408.4	4.6	503.0	6.5	4.7	401.0	6.0	489.3	8.1	4.9	415.9	5.1	516.5	5.6	5.1

Table A10 – Part I. Age- and gender-adjusted mean achievement (PIRLS 2006 and PISA 2009) and error components

Cnt/ Prov/ Econ	All students					Boys					Girls				
	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error
	Mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
AUT	402.3	2.5	471.6	2.4	4.0	396.6	3.1	456.4	3.3	4.3	407.7	3.0	486.7	3.6	4.1
BFL	409.8	2.3	513.6	2.0	4.0	405.5	2.7	503.5	2.7	3.9	414.3	3.1	523.6	3.0	4.4
BFR	355.7	2.8	490.2	3.5	3.6	353.0	3.4	481.0	5.2	3.9	358.7	3.2	499.4	3.9	3.9
BGR	422.9	4.8	442.1	5.2	4.9	412.5	5.5	419.3	6.3	5.2	432.3	5.1	464.7	4.9	5.1
CALB	421.7	2.9	524.7	4.0	3.6	417.1	3.4	512.1	4.6	3.7	426.8	3.1	537.2	5.0	4.0
CBCL	418.6	3.0	519.1	3.8	3.3	413.5	3.6	504.8	5.1	3.2	424.2	3.5	533.2	3.6	4.0
CNSC	402.5	2.4	511.0	3.4	3.5	391.2	3.3	500.1	5.1	3.4	414.0	2.9	521.9	3.6	4.2
CONT	416.4	3.5	523.1	2.7	3.9	409.8	4.4	510.2	3.6	3.6	423.6	3.9	536.0	3.1	4.7
CQUE	392.3	3.1	517.8	2.8	4.1	384.5	4.1	506.0	3.7	4.3	400.1	3.3	529.6	3.4	4.3
DEU	415.5	2.3	495.5	2.5	4.0	411.6	3.0	480.1	3.3	4.4	419.0	2.9	510.8	3.0	4.1
DNK	419.5	2.7	492.0	1.9	4.0	412.6	3.3	481.7	2.5	4.3	425.3	3.6	502.1	2.4	4.1
ENG	401.5	2.7	492.2	2.2	3.6	390.8	3.0	483.8	3.6	3.6	412.1	3.1	500.4	3.0	3.9
ESP	369.6	2.8	480.1	1.8	3.2	367.7	3.1	469.4	2.2	3.3	371.9	3.2	490.8	2.2	3.7
FRA	381.5	2.4	492.6	2.9	3.9	376.0	2.9	477.8	3.7	4.1	387.2	2.9	507.2	3.2	4.0
HKG	429.8	2.9	528.7	2.1	5.6	423.8	3.4	516.7	3.1	5.2	436.0	3.0	540.6	2.8	6.3
HUN	421.0	3.2	493.1	3.0	4.0	417.9	3.3	477.8	3.8	4.2	423.4	4.1	508.4	3.5	4.4
IND	284.5	2.9	407.6	2.9	6.0	278.7	3.5	393.9	3.2	6.0	290.1	3.1	421.1	3.4	6.2
ISL	366.5	1.6	497.9	1.8	4.7	356.2	2.1	480.8	2.5	5.1	377.2	2.3	514.8	2.4	4.8
ISR	374.0	3.3	475.7	3.0	3.4	367.2	3.7	459.9	4.4	3.6	380.9	4.3	491.3	3.1	3.7
ITA	412.9	3.2	486.6	1.4	3.2	409.3	3.7	468.8	2.1	3.4	417.2	3.8	504.3	1.7	3.5
LTU	405.1	2.3	470.7	2.2	4.0	394.3	2.9	447.2	2.8	4.1	415.2	2.7	494.3	2.5	4.4
LUX	449.7	1.6	473.2	1.2	3.7	448.7	2.4	458.5	2.1	3.8	448.8	2.3	487.9	1.7	4.0
LVA	416.5	2.5	484.3	2.6	3.8	403.6	3.0	465.9	3.3	3.8	428.3	3.2	502.6	3.0	4.4
NLD	410.7	1.8	505.7	4.6	4.8	406.4	2.5	496.8	4.8	5.0	414.9	2.2	514.5	4.9	4.9
NOR	352.9	2.9	500.2	2.2	4.5	342.6	3.2	481.4	2.8	4.8	363.8	3.7	518.9	2.7	4.7
NZL	391.3	2.4	516.4	2.2	3.2	378.4	3.3	499.2	3.2	3.2	404.4	2.7	533.5	2.6	3.7
POL	377.3	2.5	500.3	2.3	3.8	367.6	3.0	480.5	2.6	4.0	387.3	3.1	520.1	3.0	4.1
QAT	239.0	1.2	392.8	1.0	5.9	229.3	1.6	375.7	1.4	6.5	249.2	1.8	409.8	1.3	5.4
ROU	362.8	4.5	437.0	3.4	4.3	356.3	5.1	421.2	4.1	4.6	368.3	5.1	452.8	4.0	4.5
RUS	438.3	3.9	461.2	2.9	4.4	429.9	4.1	444.1	3.3	4.3	445.9	4.2	478.3	3.3	4.8
SCO	385.5	3.0	499.2	2.7	3.5	373.7	3.5	491.1	4.1	3.6	397.7	4.1	507.3	3.1	3.9
SGP	424.8	3.2	520.5	1.3	4.0	415.4	3.8	509.2	2.0	4.0	433.9	3.4	531.8	1.9	4.3
SVK	394.9	2.9	478.6	2.6	3.4	388.7	3.7	458.5	3.5	3.7	400.9	2.9	498.7	2.8	3.7
SVN	379.3	2.5	483.1	1.1	4.8	368.9	3.2	461.6	1.8	5.1	390.1	2.8	504.6	1.9	4.9
SWE	421.5	2.5	495.7	2.5	3.6	410.3	3.0	478.3	2.9	3.7	431.6	3.1	513.0	3.0	4.1
TAP	395.5	2.3	492.9	2.2	5.3	388.8	2.8	479.5	3.5	5.3	402.4	2.4	506.3	3.2	5.6
TTO	305.6	3.8	430.9	1.6	4.4	293.8	4.3	409.8	2.2	4.9	317.4	4.5	451.8	2.1	4.3
USA	402.0	3.7	496.8	3.3	3.5	396.5	4.4	488.9	4.0	3.5	407.6	3.9	504.6	3.4	3.9

Table A10 – Part II. Age- and gender-adjusted mean achievement (PIRLS 2006 and PISA 2009) and error components

Cnt/ Prov/ Econ	Natives					Native Boys					Native Girls				
	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
AUT	404.1	2.4	475.1	2.3	4.0	398.1	3.0	458.9	3.4	4.4	409.7	3.0	491.4	3.4	4.1
BFL	411.0	2.3	516.4	2.1	4.0	407.0	2.7	507.2	2.8	4.0	415.3	3.1	525.5	3.1	4.5
BFR	357.5	2.9	495.8	3.4	3.7	355.2	3.4	488.1	4.8	4.0	360.2	3.4	503.4	4.1	3.9
BGR	423.8	4.7	442.7	5.2	4.9	413.7	5.4	420.2	6.4	5.2	432.8	4.9	465.0	4.9	5.1
CALB	422.9	2.8	525.4	4.2	3.7	418.4	3.2	513.4	4.7	3.8	427.9	3.1	537.3	5.0	4.0
CBCL	417.7	3.1	519.8	3.9	3.4	412.8	3.8	507.4	5.2	3.3	423.2	3.6	531.8	3.9	4.1
CNSC	403.0	2.4	510.5	3.6	3.5	391.2	3.4	500.3	5.3	3.5	415.0	2.9	520.5	3.7	4.2
CONT	416.7	3.5	524.0	2.6	4.0	409.2	4.3	511.4	3.6	3.6	424.7	4.1	536.2	3.0	4.8
CQUE	393.6	3.2	520.7	2.8	4.1	385.5	4.2	509.0	3.4	4.4	401.9	3.5	532.2	3.6	4.4
DEU	416.6	2.3	498.2	2.6	4.1	412.8	2.9	482.9	3.4	4.4	420.0	3.0	513.5	3.0	4.2
DNK	420.6	2.6	493.7	1.9	4.0	413.6	3.4	483.5	2.6	4.3	426.5	3.7	503.8	2.4	4.1
ENG	406.5	2.7	493.9	2.3	3.7	395.5	3.0	485.8	3.5	3.7	417.3	3.3	502.0	2.9	4.0
ESP	372.7	2.9	485.1	1.9	3.3	370.9	3.2	474.8	2.3	3.3	374.9	3.5	495.4	2.3	3.7
FRA	382.7	2.5	494.4	3.0	3.9	377.2	3.0	479.8	3.7	4.1	388.4	3.1	508.8	3.3	4.0
HKG	427.5	3.0	533.5	2.2	5.7	422.0	3.6	521.7	3.5	5.3	433.4	3.1	545.3	3.0	6.4
HUN	421.5	3.2	492.8	3.0	4.0	418.6	3.4	477.2	3.8	4.2	423.6	4.1	508.3	3.6	4.4
IND	286.9	2.9	407.8	2.9	6.0	280.3	3.4	394.4	3.2	6.0	293.2	3.3	421.2	3.4	6.2
ISL	367.8	1.8	498.8	1.9	4.7	357.6	2.4	481.7	2.5	5.1	378.6	2.4	515.7	2.5	4.8
ISR	374.6	3.4	476.6	3.0	3.4	368.1	3.9	460.8	4.5	3.5	381.3	4.4	492.6	3.1	3.8
ITA	414.7	3.2	489.9	1.4	3.3	411.0	3.8	472.1	2.2	3.5	419.1	3.6	507.7	1.8	3.6
LTU	405.2	2.3	470.8	2.1	4.0	394.3	2.9	447.3	2.7	4.1	415.4	2.6	494.1	2.5	4.4
LUX	451.5	1.7	476.6	1.4	3.8	451.4	2.4	462.4	2.2	3.9	449.8	2.6	490.7	2.1	4.1
LVA	414.4	3.0	484.1	2.6	4.0	400.4	3.7	466.2	3.3	4.0	427.3	3.8	502.0	3.0	4.7
NLD	411.9	1.8	507.3	4.5	4.8	407.7	2.6	498.7	4.8	5.1	416.0	2.3	515.8	4.7	4.9
NOR	354.1	3.0	501.9	2.3	4.5	344.0	3.4	483.1	2.8	4.8	364.9	3.8	520.8	2.7	4.8
NZL	388.7	2.5	515.9	2.2	3.3	374.5	3.7	498.3	3.3	3.3	403.0	2.9	533.2	2.8	3.7
POL	377.6	2.5	500.2	2.3	3.8	367.9	3.0	480.5	2.6	4.0	387.7	3.1	519.8	2.9	4.1
QAT	235.6	1.2	367.9	1.4	6.3	226.3	1.7	348.2	1.7	7.0	245.4	1.9	387.0	1.7	5.9
ROU	363.2	4.5	437.0	3.4	4.3	356.7	5.1	421.3	4.1	4.6	368.4	5.2	452.6	4.0	4.5
RUS	438.8	3.9	461.7	2.9	4.4	430.1	4.3	444.7	3.4	4.3	446.5	4.2	478.6	3.3	4.8
SCO	387.2	3.1	499.6	2.7	3.6	375.5	3.6	491.6	3.9	3.7	399.4	4.2	507.5	3.3	4.0
SGP	422.8	3.2	521.2	1.5	4.0	413.3	3.8	509.0	2.0	3.9	432.1	3.5	533.5	2.3	4.4
SVK	395.6	2.9	478.7	2.6	3.4	389.2	3.6	458.8	3.5	3.7	401.6	2.9	498.5	2.8	3.7
SVN	380.7	2.5	484.2	1.1	4.8	370.4	3.3	463.1	1.8	5.1	391.4	2.8	505.3	2.0	4.9
SWE	423.6	2.4	498.8	2.5	3.6	412.7	2.8	482.1	3.0	3.7	433.5	2.9	515.5	2.9	4.1
TAP	399.5	2.2	492.8	2.2	5.4	393.8	2.6	479.8	3.5	5.3	405.1	2.4	505.7	3.1	5.7
TTO	304.4	3.7	430.1	1.6	4.5	292.5	4.2	408.8	2.4	5.0	316.3	4.5	451.2	2.1	4.4
USA	405.1	3.9	497.6	3.3	3.5	399.9	4.5	490.2	4.1	3.5	410.4	4.1	504.9	3.3	4.0

Table A11. Reweighted reading achievement progress - PIRLS 2001 to PISA 2000

Cnt/Econ	All students		Boys		Girls		Natives		Native boys		Native girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
ARG	99.0	11.7	90.0	11.1	107.6	15.6	98.4	11.8	89.1	11.1	107.4	15.6
BGR	3.3	8.0	-4.5	8.5	12.2	9.7	1.1	8.0	-6.5	8.5	9.6	9.8
CAN	111.5	6.0	108.6	7.4	112.2	6.9	106.7	5.5	102.1	5.8	110.3	6.9
CZE	87.6	6.1	78.2	7.0	97.4	7.0	86.7	6.0	77.2	7.0	96.6	7.0
DEU	73.5	5.7	66.2	6.6	80.7	6.6	73.1	5.6	63.5	6.4	83.1	6.6
FRA	109.0	7.4	102.2	8.9	115.0	8.0	110.3	7.3	103.1	9.1	116.7	7.8
GRC	81.2	9.3	71.0	10.9	89.8	10.2	83.3	9.3	74.6	10.9	90.0	10.2
HKG	129.9	9.2	130.5	10.3	128.9	10.2	141.0	9.4	141.1	10.7	140.2	10.2
HUN	69.6	7.2	63.0	8.5	76.9	7.7	67.7	7.2	60.7	8.4	75.4	7.7
ISL	129.5	5.7	121.2	6.5	136.6	6.6	127.6	5.8	119.2	6.6	135.1	6.7
ISR	76.3	10.2	82.8	12.5	69.2	10.7	74.0	10.2	80.6	12.4	67.0	10.9
ITA	73.6	5.9	60.7	7.7	85.4	7.3	73.9	5.9	61.1	7.6	85.5	7.3
LVA	46.2	8.7	38.4	9.9	55.8	10.7	38.3	8.1	24.0	8.6	53.3	9.7
MKD	75.0	7.3	63.3	8.4	87.4	8.5	72.8	7.1	60.5	7.8	85.5	8.1
NOR	143.5	6.9	133.8	9.2	152.4	7.5	142.8	6.8	132.5	9.2	152.5	7.6
NZL	134.8	7.0	127.0	9.0	142.1	8.8	136.1	6.7	127.0	8.2	144.6	9.0
ROM	71.6	9.3	74.5	10.9	67.2	10.5	69.5	9.5	73.1	11.2	64.1	10.5
RUS	64.2	8.0	54.2	8.8	73.5	8.4	61.5	8.1	51.3	8.8	71.1	8.6
SCO	120.9	10.4	117.8	14.2	121.7	10.4	117.3	11.3	115.4	15.4	116.3	10.1
SWE	71.4	6.4	64.3	7.4	78.6	7.0	69.1	6.4	60.5	7.4	78.0	7.0
USA	104.5	10.4	102.8	13.8	104.7	9.6	100.3	10.5	100.7	14.1	98.6	9.4

Note: Results obtained after additional reweighting of age- and gender-adjusted data for student family background and immigrant status.

Table A12. Reweighted reading achievement progress - PIRLS 2006 to PISA 2009

Cnt/Prov/Econ	All students		Boys		Girls		Natives		Native boys		Native girls	
	progress	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*	*progress*	*S.E.*
AUT	66.6	5.5	57.5	6.5	76.0	6.5	67.6	5.3	57.6	6.4	78.0	6.3
BFL	105.1	5.4	97.6	6.1	112.6	6.9	106.4	5.5	99.1	6.3	113.4	7.1
BFR	134.2	6.6	129.4	8.9	138.0	7.8	135.7	6.5	130.8	8.6	139.5	8.2
BGR	12.5	8.5	-0.9	9.8	26.7	8.7	12.4	8.5	-0.9	9.8	26.5	8.7
CAN Alberta	95.1	6.8	86.7	7.8	103.2	7.8	94.1	6.8	86.5	7.4	101.3	7.9
CAN British Col.	94.1	6.0	86.8	7.3	100.6	6.8	95.3	6.2	90.5	7.7	99.1	7.1
CAN Nova Scotia	93.7	5.9	94.1	7.6	93.3	6.6	92.5	6.1	93.9	7.8	91.0	6.8
CAN Ontario	96.9	6.8	91.6	8.2	100.8	7.9	96.4	7.0	92.2	8.5	99.5	8.3
CAN Quebec	118.7	6.4	114.0	7.7	123.1	7.1	119.1	6.5	115.3	7.7	122.4	7.4
DEU	80.5	5.6	71.7	6.8	89.5	6.2	80.8	5.6	71.8	6.8	89.9	6.3
DNK	75.5	5.4	73.9	6.3	77.9	6.2	74.8	5.3	73.5	6.2	76.9	6.1
ENG	88.2	5.2	90.9	6.2	85.4	6.1	85.0	5.3	88.2	6.2	81.7	6.3
ESP	108.1	4.6	99.6	4.9	116.3	5.6	109.5	4.7	101.3	5.1	117.2	5.9
FRA	110.1	5.5	101.5	6.4	118.3	6.0	110.5	5.6	102.0	6.4	118.5	6.2
HKG	100.0	6.8	92.1	7.3	107.8	7.7	107.1	6.9	100.5	7.4	113.6	7.9
HUN	68.3	6.0	54.3	6.6	82.9	7.1	67.3	6.0	53.4	6.7	81.9	7.2
IND	112.3	7.6	107.1	8.1	118.0	8.3	111.5	7.6	106.9	8.1	116.7	8.3
ISL	130.1	5.3	123.7	6.1	136.0	5.9	129.1	5.4	122.9	6.3	134.5	6.0
ISR	92.8	5.7	85.0	6.8	100.4	6.8	93.4	5.8	84.8	6.9	101.9	6.9
ITA	74.3	6.0	61.9	7.3	85.7	6.9	75.4	6.1	63.8	7.5	86.1	6.8
LTU	60.3	5.1	47.6	5.9	73.2	5.8	59.9	5.1	47.4	5.8	72.5	5.8
LUX	15.1	4.5	4.2	5.4	27.7	5.4	14.5	4.6	2.9	5.5	27.6	5.7
LVA	66.0	5.5	62.7	6.3	69.7	6.7	65.4	5.5	62.7	6.3	68.6	6.7
NLD	92.9	6.9	88.0	7.5	97.8	7.4	92.6	6.9	88.1	7.5	97.0	7.3
NOR	145.2	5.7	137.4	6.5	152.1	6.7	143.3	5.8	135.2	6.5	150.7	6.8
NZL	120.3	4.5	115.6	5.7	124.6	5.3	123.4	4.7	120.9	6.0	125.5	5.5
POL	104.1	5.5	96.6	6.3	110.5	6.3	103.5	5.4	96.3	6.3	109.5	6.2
QAT	146.6	6.2	139.4	7.2	152.7	6.3	129.5	6.6	119.9	7.7	137.8	6.5
ROU	49.3	7.3	38.6	8.1	60.7	8.4	48.9	7.4	38.4	8.1	60.1	8.4
RUS	4.9	7.0	-6.3	7.6	17.2	8.3	4.6	7.1	-5.5	7.6	15.9	8.4
SCO	112.0	5.8	116.7	7.0	106.3	7.0	109.9	5.9	115.0	7.1	103.7	7.1
SGP	93.4	5.6	90.7	6.3	96.7	6.3	98.2	5.7	94.5	6.3	102.5	6.6
SVK	80.0	5.3	65.5	6.6	94.8	5.5	79.5	5.3	65.4	6.5	93.6	5.5
SVN	102.7	5.6	92.4	6.4	112.4	6.1	102.4	5.6	92.7	6.4	111.4	6.1
SWE	71.7	5.2	65.7	5.8	78.1	6.1	72.2	5.1	66.2	5.8	78.8	6.0
TAP	85.0	6.6	77.5	7.5	92.2	7.6	84.2	6.6	77.1	7.5	91.0	7.6
TTO	116.9	6.2	106.9	7.2	126.7	6.8	116.6	6.2	106.8	7.2	126.0	6.8
USA	94.4	6.1	93.0	7.0	95.3	6.7	92.2	6.2	91.2	7.2	92.8	6.7

Note: Results obtained after additional reweighting of age- and gender-adjusted data for student family background and immigrant status.

Table A13 – Part I. Reweighted mean achievement (PIRLS 2001 and PISA 2000) and error components

Cnt/ Econ	All students					Boys					Girls				
	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error
	mean	samp err	mean	samp err		mean	samp err	Mean	samp err		mean	samp err	mean	samp err	
ARG	326.6	7.1	425.6	7.7	5.3	315.0	7.1	405.0	6.5	5.5	338.5	9.4	446.1	10.8	6.1
BGR	434.4	3.8	437.8	4.6	5.4	420.8	5.2	416.3	4.5	5.0	446.9	4.0	459.1	5.9	6.5
CAN	416.6	4.2	528.1	1.5	4.0	404.2	5.9	512.8	1.9	4.0	431.2	4.8	543.3	1.7	4.7
CZE	403.5	2.9	491.1	2.2	4.9	396.9	3.5	475.0	3.3	5.1	409.8	3.9	507.1	2.6	5.2
DEU	413.1	2.7	486.5	2.2	4.4	404.7	3.4	470.9	3.1	4.7	421.4	3.4	502.1	3.1	4.7
FRA	392.6	4.8	501.6	2.5	5.0	385.6	6.4	487.8	3.4	5.2	400.2	5.2	515.3	2.7	5.5
GRC	393.4	5.0	474.6	4.4	6.5	386.8	7.0	457.7	5.6	6.2	401.6	5.6	491.3	4.3	7.4
HKG	392.8	4.3	522.7	2.9	7.7	385.8	5.5	516.3	4.7	7.4	400.1	4.8	529.1	3.5	8.3
HUN	412.5	2.6	482.1	3.9	5.5	404.8	3.5	467.8	5.1	5.8	419.5	2.8	496.4	4.3	5.7
ISL	375.1	1.9	504.7	1.5	5.2	364.6	3.2	485.8	2.2	5.2	386.8	2.8	523.4	2.1	5.6
ISR	384.5	3.7	460.8	8.1	4.9	372.5	5.2	455.3	10.2	4.9	396.9	4.8	466.0	7.8	5.5
ITA	413.5	3.0	487.1	2.7	4.3	408.4	4.0	469.2	4.9	4.2	419.5	4.0	505.0	3.6	4.9
LVA	412.5	5.6	458.7	4.3	5.0	395.7	6.9	434.1	4.9	5.2	427.6	7.3	483.3	5.0	5.9
MKD	312.0	5.0	387.0	1.2	5.2	302.8	6.0	366.2	1.9	5.5	320.3	6.2	407.7	1.9	5.5
NOR	360.5	4.2	504.0	2.5	4.9	350.4	6.6	484.2	3.5	5.3	371.3	4.7	523.7	2.6	5.3
NZL	390.2	5.1	525.0	2.3	4.1	377.1	6.6	504.1	4.0	4.6	403.6	6.4	545.7	3.7	4.7
ROM	388.3	5.8	459.9	5.1	5.1	381.8	6.5	456.2	7.0	5.3	393.7	6.1	460.9	6.5	5.6
RUS	398.0	4.4	462.2	3.9	5.5	390.0	5.2	444.2	4.4	5.5	406.5	4.6	480.0	3.9	5.9
SCO	399.3	8.5	520.1	2.7	5.2	390.5	11.6	508.4	3.3	7.4	410.0	8.5	531.7	3.8	4.6
SWE	440.8	2.8	512.2	2.2	5.4	429.4	4.0	493.8	2.7	5.6	451.8	3.3	530.4	2.6	5.6
USA	396.5	6.7	500.9	6.5	4.6	384.1	10.2	486.9	8.0	4.7	410.2	5.9	514.9	5.6	5.1

Note: Results obtained after additional reweighting of age- and gender-adjusted data for student family background and immigrant status.

Table A13 – Part II. Reweighted mean achievement (PIRLS 2001 and PISA 2000) and error components

Cnt/ Econ	Natives					Native boys					Native girls				
	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error	PIRLS 2001		PISA 2000		link error
	mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
ARG	327.0	7.2	425.4	7.8	5.3	315.5	7.2	404.6	6.5	5.5	338.7	9.4	446.1	10.9	6.1
BGR	436.8	3.7	437.9	4.5	5.5	423.4	5.2	416.9	4.4	5.0	449.0	4.1	458.5	5.9	6.6
CAN	423.7	3.4	530.4	1.5	4.0	412.5	3.9	514.6	1.9	4.0	435.9	4.6	546.1	1.7	4.7
CZE	404.6	2.8	491.3	2.2	4.9	398.3	3.4	475.5	3.3	5.1	410.5	3.9	507.0	2.6	5.2
DEU	422.1	2.6	495.2	2.1	4.6	415.3	2.9	478.9	3.1	4.8	428.3	3.3	511.4	3.0	4.9
FRA	392.7	4.6	503.0	2.5	5.0	385.9	6.6	489.0	3.4	5.2	400.0	4.9	516.7	2.7	5.5
GRC	394.4	5.2	477.7	4.2	6.5	386.5	7.0	461.1	5.4	6.4	403.9	5.9	493.9	4.0	7.3
HKG	387.2	4.8	528.2	2.6	7.7	381.7	6.2	522.8	4.5	7.4	393.3	4.9	533.5	3.4	8.3
HUN	414.2	2.6	481.8	3.9	5.5	406.5	3.5	467.2	5.1	5.7	421.0	2.8	496.4	4.3	5.7
ISL	377.3	1.9	504.9	1.6	5.2	367.4	3.3	486.6	2.3	5.3	388.0	3.0	523.0	2.2	5.6
ISR	387.4	3.6	461.5	8.2	4.9	376.9	4.7	457.5	10.4	4.9	398.0	4.8	465.0	8.0	5.5
ITA	414.0	3.0	487.9	2.7	4.3	409.0	4.0	470.1	4.9	4.3	420.0	4.1	505.6	3.6	4.9
LVA	421.3	3.0	459.5	5.6	4.9	406.4	3.8	430.4	6.1	4.7	434.1	4.3	487.4	6.4	5.8
MKD	317.0	4.9	389.8	1.3	5.0	308.4	5.3	368.9	2.0	5.3	324.6	5.8	410.1	2.0	5.4
NOR	363.5	3.9	506.3	2.5	5.0	353.8	6.6	486.3	3.5	5.4	373.6	4.7	526.2	2.7	5.3
NZL	392.2	4.5	528.4	2.4	4.3	379.3	5.4	506.3	4.1	4.6	405.2	6.5	549.7	3.8	4.9
ROM	390.0	6.0	459.5	5.2	5.2	383.3	6.9	456.4	7.1	5.3	395.6	6.2	459.6	6.3	5.6
RUS	400.0	4.3	461.5	4.0	5.6	391.9	5.0	443.2	4.5	5.6	408.6	4.7	479.6	4.0	6.0
SCO	404.2	9.6	521.4	2.7	5.5	393.7	12.9	509.1	3.2	7.7	417.0	8.2	533.3	3.8	4.6
SWE	447.4	2.5	516.5	2.0	5.5	437.2	3.7	497.7	2.7	5.8	457.0	3.3	534.9	2.5	5.7
USA	402.7	6.7	503.0	6.5	4.7	388.6	10.5	489.3	8.1	4.9	417.9	5.4	516.5	5.6	5.2

Note: Results obtained after additional reweighting of age- and gender-adjusted data for student family background and immigrant status.

Table A14 – Part I. Reweighted mean achievement (PIRLS 2006 and PISA 2009) and error components

Cnt/ Prov/ Econ	All students					Boys					Girls				
	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error
	Mean	samp err	mean	samp err		mean	samp err	Mean	samp err		mean	samp err	mean	samp err	
AUT	404.9	2.9	471.6	2.4	4.0	398.9	3.5	456.4	3.3	4.3	410.8	3.5	486.7	3.6	4.1
BFL	408.5	2.9	513.6	2.0	4.1	406.0	3.6	503.5	2.7	4.2	411.1	4.3	523.6	3.0	4.5
BFR	356.0	4.3	490.2	3.5	3.5	351.6	5.8	481.0	5.2	4.1	361.4	5.3	499.4	3.9	4.1
BGR	429.6	4.5	442.1	5.2	5.0	420.2	5.2	419.3	6.3	5.3	438.0	4.9	464.7	4.9	5.2
CALB	429.6	4.1	524.7	4.0	3.7	425.4	4.9	512.1	4.6	3.8	434.0	4.4	537.2	5.0	4.1
CBCL	425.0	3.3	519.1	3.8	3.3	417.9	4.0	504.8	5.1	3.3	432.7	4.1	533.2	3.6	4.1
CNSC	417.4	3.3	511.0	3.4	3.6	406.0	4.5	500.1	5.1	3.5	428.6	3.5	521.9	3.6	4.3
CONT	426.2	4.7	523.1	2.7	4.1	418.6	6.2	510.2	3.6	4.0	435.2	5.5	536.0	3.1	4.8
CQUE	399.1	4.1	517.8	2.8	4.0	392.0	5.3	506.0	3.7	4.3	406.5	4.6	529.6	3.4	4.3
DEU	415.0	2.9	495.5	2.5	4.1	408.5	3.9	480.1	3.3	4.5	421.3	3.6	510.8	3.0	4.2
DNK	416.4	3.0	492.0	1.9	4.0	407.9	3.8	481.7	2.5	4.4	424.2	3.9	502.1	2.4	4.2
ENG	404.0	3.0	492.2	2.2	3.6	393.0	3.3	483.8	3.6	3.7	415.1	3.6	500.4	3.0	4.0
ESP	372.0	2.8	480.1	1.8	3.2	369.8	2.9	469.4	2.2	3.3	374.5	3.5	490.8	2.2	3.8
FRA	382.5	2.6	492.6	2.9	3.9	376.3	3.2	477.8	3.7	4.1	388.9	3.3	507.2	3.2	4.0
HKG	428.7	3.3	528.7	2.1	5.6	424.6	4.0	516.7	3.1	5.2	432.8	3.7	540.6	2.8	6.2
HUN	424.8	3.3	493.1	3.0	4.1	423.5	3.3	477.8	3.8	4.3	425.5	4.4	508.4	3.5	4.4
IND	295.3	3.7	407.6	2.9	6.0	286.8	4.5	393.9	3.2	6.0	303.1	4.2	421.1	3.4	6.3
ISL	367.8	1.8	497.9	1.8	4.7	357.1	2.3	480.8	2.5	5.1	378.8	2.5	514.8	2.4	4.8
ISR	382.9	3.4	475.7	3.0	3.5	374.9	3.7	459.9	4.4	3.6	390.9	4.7	491.3	3.1	3.8
ITA	412.3	4.9	486.6	1.4	3.3	406.9	6.1	468.8	2.1	3.5	418.6	5.5	504.3	1.7	3.8
LTU	410.4	2.4	470.7	2.2	4.0	399.5	3.1	447.2	2.8	4.1	421.1	2.8	494.3	2.5	4.4
LUX	458.1	2.1	473.2	1.2	3.8	454.3	3.1	458.5	2.1	3.9	460.2	3.1	487.9	1.7	4.1
LVA	418.3	2.7	484.3	2.6	4.1	403.2	3.5	465.9	3.3	4.0	432.9	3.6	502.6	3.0	4.7
NLD	412.8	1.8	505.7	4.6	4.8	408.7	2.6	496.8	4.8	5.1	416.7	2.5	514.5	4.9	4.9
NOR	355.0	2.8	500.2	2.2	4.4	344.0	3.4	481.4	2.8	4.7	366.8	3.9	518.9	2.7	4.7
NZL	396.0	2.3	516.4	2.2	3.2	383.6	3.5	499.2	3.2	3.2	408.9	2.8	533.5	2.6	3.7
POL	396.2	3.1	500.3	2.3	3.9	383.8	3.9	480.5	2.6	4.2	409.6	3.6	520.1	3.0	4.2
QAT	246.2	2.1	392.8	1.0	5.7	236.3	3.1	375.7	1.4	6.4	257.1	3.1	409.8	1.3	5.3
ROU	387.7	4.8	437.0	3.4	4.4	382.6	5.3	421.2	4.1	4.6	392.1	5.6	452.8	4.0	4.7
RUS	456.3	4.4	461.2	2.9	4.7	450.4	5.0	444.1	3.3	4.7	461.1	5.7	478.3	3.3	5.1
SCO	387.2	3.8	499.2	2.7	3.6	374.4	4.4	491.1	4.1	3.7	400.9	4.7	507.3	3.1	4.0
SGP	427.1	3.7	520.5	1.3	4.0	418.5	4.4	509.2	2.0	4.0	435.0	4.0	531.8	1.9	4.4
SVK	398.6	3.1	478.6	2.6	3.4	393.0	4.1	458.5	3.5	3.8	403.9	3.0	498.7	2.8	3.7
SVN	380.4	2.7	483.1	1.1	4.8	369.2	3.4	461.6	1.8	5.1	392.2	3.1	504.6	1.9	4.9
SWE	424.0	2.8	495.7	2.5	3.6	412.5	3.3	478.3	2.9	3.7	434.9	3.4	513.0	3.0	4.1
TAP	407.9	3.1	492.9	2.2	5.4	402.0	3.8	479.5	3.5	5.4	414.1	3.7	506.3	3.2	5.8
TTO	313.9	4.2	430.9	1.6	4.3	302.9	4.8	409.8	2.2	4.9	325.1	5.0	451.8	2.1	4.3
USA	402.4	3.8	496.8	3.3	3.5	395.9	4.6	488.9	4.0	3.5	409.4	4.3	504.6	3.4	3.9

Note: Results obtained after additional reweighting of age- and gender-adjusted data for student family background and immigrant status.

Table A14 – Part II. Reweighted mean achievement (PIRLS 2006 and PISA 2009) and error components

Cnt/ Prov/ Econ	Natives					Native boys					Native girls				
	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error	PIRLS 2006		PISA 2009		link error
	Mean	samp err	mean	samp err		mean	samp err	mean	samp err		mean	samp err	mean	samp err	
AUT	407.6	2.7	475.1	2.3	4.0	401.3	3.3	458.9	3.4	4.4	413.4	3.4	491.4	3.4	4.1
BFL	410.0	3.0	516.4	2.1	4.1	408.0	3.7	507.2	2.8	4.2	412.1	4.6	525.5	3.1	4.5
BFR	360.1	4.3	495.8	3.4	3.6	357.3	5.8	488.1	4.8	4.1	363.9	5.9	503.4	4.1	4.0
BGR	430.4	4.5	442.7	5.2	5.0	421.1	5.2	420.2	6.4	5.2	438.6	4.9	465.0	4.9	5.3
CALB	431.2	3.8	525.4	4.2	3.8	426.9	4.3	513.4	4.7	3.9	436.0	4.5	537.3	5.0	4.1
CBCL	424.5	3.4	519.8	3.9	3.5	416.9	4.5	507.4	5.2	3.4	432.7	4.2	531.8	3.9	4.2
CNSC	418.0	3.3	510.5	3.6	3.6	406.4	4.5	500.3	5.3	3.6	429.5	3.7	520.5	3.7	4.4
CONT	427.6	5.0	524.0	2.6	4.1	419.2	6.7	511.4	3.6	3.9	436.7	5.9	536.2	3.0	5.0
CQUE	401.5	4.1	520.7	2.8	4.2	393.8	5.3	509.0	3.4	4.4	409.8	4.7	532.2	3.6	4.5
DEU	417.4	2.8	498.2	2.6	4.1	411.0	4.0	482.9	3.4	4.4	423.6	3.6	513.5	3.0	4.2
DNK	418.9	2.9	493.7	1.9	4.0	410.0	3.6	483.5	2.6	4.4	426.9	3.8	503.8	2.4	4.2
ENG	408.9	3.1	493.9	2.3	3.7	397.6	3.4	485.8	3.5	3.8	420.3	3.8	502.0	2.9	4.1
ESP	375.6	2.8	485.1	1.9	3.3	373.5	3.0	474.8	2.3	3.3	378.2	3.8	495.4	2.3	3.8
FRA	383.9	2.7	494.4	3.0	3.9	377.8	3.2	479.8	3.7	4.1	390.3	3.4	508.8	3.3	4.1
HKG	426.3	3.3	533.5	2.2	5.6	421.2	3.7	521.7	3.5	5.3	431.7	3.7	545.3	3.0	6.3
HUN	425.5	3.3	492.8	3.0	4.0	423.8	3.5	477.2	3.8	4.3	426.5	4.4	508.3	3.6	4.4
IND	296.3	3.7	407.8	2.9	6.0	287.5	4.5	394.4	3.2	6.0	304.5	4.2	421.2	3.4	6.3
ISL	369.7	1.8	498.8	1.9	4.8	358.7	2.5	481.7	2.5	5.2	381.2	2.4	515.7	2.5	4.9
ISR	383.2	3.5	476.6	3.0	3.5	376.0	3.9	460.8	4.5	3.6	390.7	4.8	492.6	3.1	3.8
ITA	414.5	4.9	489.9	1.4	3.3	408.3	6.3	472.1	2.2	3.5	421.6	5.3	507.7	1.8	3.9
LTU	410.8	2.4	470.8	2.1	4.0	400.0	3.1	447.3	2.7	4.1	421.6	2.9	494.1	2.5	4.4
LUX	462.1	2.1	476.6	1.4	3.9	459.5	3.1	462.4	2.2	4.0	463.1	3.3	490.7	2.1	4.2
LVA	418.7	2.7	484.1	2.6	4.1	403.5	3.6	466.2	3.3	4.0	433.3	3.6	502.0	3.0	4.8
NLD	414.8	2.0	507.3	4.5	4.8	410.7	2.8	498.7	4.8	5.1	418.8	2.7	515.8	4.7	4.9
NOR	358.7	3.0	501.9	2.3	4.5	347.9	3.5	483.1	2.8	4.7	370.1	4.0	520.8	2.7	4.8
NZL	392.6	2.6	515.9	2.2	3.3	377.4	3.9	498.3	3.3	3.3	407.7	2.9	533.2	2.8	3.7
POL	396.7	3.0	500.2	2.3	3.9	384.2	4.0	480.5	2.6	4.2	410.4	3.6	519.8	2.9	4.2
QAT	238.4	1.8	367.9	1.4	6.2	228.3	2.7	348.2	1.7	7.0	249.3	2.5	387.0	1.7	5.7
ROU	388.1	4.9	437.0	3.4	4.4	382.9	5.3	421.3	4.1	4.6	392.5	5.7	452.6	4.0	4.7
RUS	457.1	4.5	461.7	2.9	4.6	450.2	5.0	444.7	3.4	4.6	462.7	5.8	478.6	3.3	5.1
SCO	389.7	3.8	499.6	2.7	3.6	376.6	4.5	491.6	3.9	3.7	403.9	4.8	507.5	3.3	4.1
SGP	423.0	3.8	521.2	1.5	4.0	414.5	4.4	509.0	2.0	4.0	431.0	4.4	533.5	2.3	4.4
SVK	399.3	3.1	478.7	2.6	3.4	393.3	4.0	458.8	3.5	3.7	404.9	3.0	498.5	2.8	3.7
SVN	381.8	2.7	484.2	1.1	4.8	370.4	3.4	463.1	1.8	5.1	393.8	3.0	505.3	2.0	5.0
SWE	426.6	2.6	498.8	2.5	3.7	415.9	3.2	482.1	3.0	3.8	436.6	3.2	515.5	2.9	4.2
TAP	408.5	3.1	492.8	2.2	5.4	402.7	3.8	479.8	3.5	5.4	414.6	3.7	505.7	3.1	5.8
TTO	313.6	4.1	430.1	1.6	4.3	302.0	4.7	408.8	2.4	4.9	325.3	4.9	451.2	2.1	4.3
USA	405.4	3.9	497.6	3.3	3.5	399.0	4.7	490.2	4.1	3.5	412.1	4.2	504.9	3.3	4.0

Note: Results obtained after additional reweighting of age- and gender-adjusted data for student family background and immigrant status.

Table A15. Age- and gender-adjusted achievement progress at different percentiles of performance (PIRLS 2001 and PISA 2000)

Cnt/Econ	All students						Boys						Girls					
	PIRLS 2001		PISA 2000		progress		PIRLS 2001		PISA 2000		progress		PIRLS 2001		PISA 2000		progress	
	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90
ARG	183	428	294	561	111	133	179	423	284	545	105	122	191	440	317	578	126	138
BGR	283	547	308	567	26	20	275	535	289	546	14	11	296	551	334	581	38	30
CAN	270	530	403	649	133	119	260	521	385	636	125	114	281	543	421	661	140	119
CZE	279	509	367	615	87	105	270	508	348	600	79	92	290	517	393	623	103	106
DEU	287	525	343	621	56	96	276	518	331	607	55	89	291	530	367	633	77	103
FRA	261	518	377	622	116	104	254	509	358	613	103	104	269	524	398	630	129	106
GRC	264	513	346	599	82	86	242	507	326	584	85	77	274	515	374	609	100	94
HKG	267	504	406	630	139	126	251	497	390	631	139	134	284	513	421	630	137	117
HUN	285	524	353	605	68	81	276	517	342	589	66	71	294	526	374	618	79	91
ISL	241	499	377	626	137	127	236	488	353	614	117	126	253	509	407	636	155	128
ISR	213	509	323	594	110	85	205	500	313	591	108	91	225	521	332	600	107	80
ITA	277	527	366	608	88	81	272	525	345	596	73	70	280	527	389	619	110	92
LVA	294	524	329	589	36	66	282	509	305	569	23	60	304	533	360	605	55	72
MKD	162	444	275	505	113	60	159	433	257	483	98	51	169	457	300	518	131	61
NOR	234	480	365	633	132	152	225	483	343	614	118	131	248	486	402	644	154	158
NZL	223	532	381	658	158	126	208	516	357	640	149	124	241	546	411	672	170	127
ROM	238	512	334	590	96	78	228	506	328	585	100	79	242	514	337	590	94	76
RUS	271	503	338	583	67	79	265	497	318	567	52	70	276	511	362	596	86	85
SCO	229	519	388	652	159	133	228	512	375	641	147	129	246	528	401	661	155	133
SWE	319	553	382	634	62	82	302	541	365	619	63	79	331	562	408	648	76	86
USA	245	532	361	633	116	101	226	530	337	626	111	96	261	540	388	639	127	99

Table A16. Age- and gender-adjusted achievement progress at different percentiles of performance (PIRLS 2006 and PISA 2009)

Cnt/Prov/Econ	All students						Boys						Girls					
	PIRLS 2006		PISA 2009		progress		PIRLS 2006		PISA 2009		progress		PIRLS 2006		PISA 2009		progress	
	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90	p10	p90
AUT	287	510	343	601	56	90	281	504	331	585	50	81	297	514	353	618	55	104
BFL	309	514	385	634	76	120	302	509	371	626	70	117	314	519	396	636	82	117
BFR	246	468	349	627	103	160	247	467	332	625	85	158	245	469	365	630	120	162
BGR	287	548	308	576	21	28	273	539	274	563	1	25	305	560	331	585	27	25
CAN Alberta	302	539	401	650	100	110	298	535	378	642	80	107	304	544	420	653	116	110
CAN British Col.	293	540	389	642	96	102	286	540	375	632	89	92	299	542	409	650	110	108
CAN Nova Scotia	271	526	386	627	115	102	256	521	371	611	116	90	286	530	405	645	119	115
CAN Ontario	291	539	404	645	112	105	279	536	388	627	109	90	301	542	418	643	117	101
CAN Quebec	280	510	390	633	110	124	272	506	383	620	111	114	290	515	411	642	121	128
DEU	303	525	364	619	61	94	298	522	346	604	49	81	313	526	387	627	74	101
DNK	301	530	378	605	76	75	295	520	368	596	73	75	306	537	385	612	79	75
ENG	261	534	365	617	104	83	252	530	352	611	100	81	270	539	377	618	106	80
ESP	249	487	358	596	110	109	247	486	344	585	97	99	249	489	375	603	126	114
FRA	265	498	347	629	82	131	256	490	330	613	73	123	274	504	374	633	101	129
HKG	318	539	407	637	89	98	306	536	394	623	88	88	329	542	430	648	102	106
HUN	307	534	370	613	63	79	306	535	347	600	41	65	312	534	382	626	70	92
IND	188	384	313	502	125	118	181	376	295	489	114	113	186	392	327	516	141	124
ISL	248	481	371	622	123	141	236	474	340	608	104	135	261	487	396	632	135	145
ISR	218	514	331	617	113	103	215	510	303	612	89	101	225	517	351	618	126	101
ITA	290	528	358	609	68	82	282	525	331	598	49	73	296	535	383	617	86	82
LTU	300	507	357	591	57	84	292	498	332	565	40	67	317	516	379	604	62	88
LUX	339	555	335	604	-4	49	338	552	314	594	-24	42	340	556	355	614	14	58
LVA	316	524	375	594	59	69	304	512	347	576	44	63	328	533	400	608	72	74
NLD	313	514	385	626	72	112	312	510	373	622	61	111	308	521	402	638	94	117
NOR	238	465	379	621	141	156	227	453	351	606	124	153	250	475	407	631	157	155
NZL	247	523	380	646	133	123	224	515	354	631	130	116	268	533	409	649	142	116
POL	249	502	383	617	134	115	241	491	357	604	116	113	257	511	416	620	158	109
QAT	143	344	264	538	122	193	136	332	243	528	107	195	151	356	284	546	134	190
ROU	237	487	319	552	82	64	234	481	299	538	65	57	242	493	344	562	102	69
RUS	317	549	343	580	26	31	307	544	325	559	18	16	334	554	368	596	34	42
SCO	249	514	374	620	124	107	239	499	354	619	115	120	266	528	386	630	120	102
SGP	295	544	387	645	92	101	280	537	371	632	90	95	315	550	404	656	89	106
SVK	271	511	365	600	93	89	262	507	327	586	66	79	278	515	382	612	104	97
SVN	258	497	358	600	100	103	244	491	332	583	88	92	270	503	388	598	119	95
SWE	310	525	364	623	54	98	297	517	343	606	47	89	325	531	395	635	70	103
TAP	283	504	372	606	90	102	271	499	351	593	79	94	293	509	392	614	99	105
TTO	176	442	291	573	115	131	168	433	265	552	97	119	195	449	329	584	133	134
USA	279	522	369	627	90	105	271	516	353	619	82	103	287	527	374	626	87	99

Table A17. Performance gap between 10th and 90th percentiles and its change over time

Cnt/Prov/Econ	PIRLS 2001 to PISA 2000			PIRLS 2006 to PISA 2009		
	PIRLS	*PISA*	*change*	*PIRLS*	*PISA*	*change*
Argentina	245.2	266.9	21.7			
Austria				222.9	257.4	34.5
Belgium (Flemish)				205.0	249.2	44.2
Belgium (French)				221.6	277.9	56.3
Bulgaria	264.3	258.9	-5.4	261.5	268.2	6.8
Canada	260.3	246.8	-13.5			
Canada Alberta				237.9	248.4	10.5
Canada British Columbia				246.9	253.0	6.1
Canada Nova Scotia				254.3	241.0	-13.3
Canada Ontario				248.2	240.9	-7.2
Canada Quebec				229.5	243.3	13.8
Czech Republic	230.0	248.1	18.0			
Denmark				228.2	227.4	-0.9
England				273.0	252.0	-21.0
France	257.1	245.1	-12.0	233.5	282.7	49.1
Germany	237.9	277.4	39.5	221.3	254.9	33.7
Greece	249.0	253.2	4.1			
Hong Kong-China	237.5	224.2	-13.3	221.3	230.6	9.3
Hungary	239.3	252.1	12.8	227.0	243.1	16.1
Iceland	257.8	248.4	-9.5	232.6	250.8	18.2
Indonesia				196.5	189.4	-7.0
Israel	295.3	270.6	-24.7	296.2	285.9	-10.2
Italy	249.9	242.7	-7.1	238.0	251.5	13.5
Latvia	229.8	260.0	30.2	208.4	218.8	10.4
Lithuania				206.7	233.4	26.7
Luxembourg				215.5	269.0	53.5
Macedonia	282.5	229.8	-52.7			
Netherlands				200.7	240.8	40.0
New Zealand	309.1	277.1	-32.1	276.0	266.1	-9.8
Norway	246.9	267.4	20.5	226.5	241.9	15.5
Poland				252.9	234.3	-18.6
Qatar				201.6	273.5	71.9
Romania	274.1	255.9	-18.2	250.9	232.7	-18.1
Russian Federation	232.9	245.0	12.1	231.9	237.7	5.8
Scotland	290.2	263.9	-26.2	264.6	246.8	-17.8
Singapore				249.0	257.8	8.8
Slovak Republic				239.8	235.7	-4.0
Slovenia				239.4	242.5	3.1
Spain				238.3	237.7	-0.6
Sweden	233.4	252.9	19.5	215.1	258.6	43.4
Taipei				221.5	233.4	11.9
Trinidad and Tobago				265.3	281.6	16.3
United States	287.6	272.6	-15.0	242.5	257.5	15.0

Table A18. Correlations between different achievement progress estimates

		PIRLS2006 to PISA2009					PIRLS2001 to PISA2000			
		Not adjusted	Age/Grade adjusted	Reweighted	Age/Grade adjusted 10th percentile	Age/Grade adjusted 90th percentile	Not adjusted	Age/Grade adjusted	Reweighted	Age/Grade adjusted 10th percentile
PIRLS 2006 to PISA 2009	Age/Grade adjusted	0.99								
	Reweighted	0.96	0.98							
	Age/Grade adjusted 10th percentile	0.88	0.92	0.87						
	Age/Grade adjusted 90th percentile	0.94	0.94	0.94	0.75					
PIRLS 2001 To PISA 2000	Unadjusted	0.85	0.88	0.86	0.87	0.83				
	Age/Grade adjusted	0.85	0.88	0.86	0.88	0.83	0.99			
	Reweighted	0.87	0.89	0.87	0.86	0.86	0.97	0.98		
	Age/Grade adjusted 10th percentile	0.78	0.83	0.80	0.88	0.75	0.91	0.94	0.90	
	Age/Grade adjusted 90th percentile	0.86	0.88	0.86	0.85	0.84	0.95	0.94	0.94	0.79

Table A19 – Part I. Distribution of background characteristics with original weights

Cnt/Prov/Econ	Percentage of girls						Age (in years)					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	0.51	0.56	0.06				10.18	15.77	5.59			
AUT				0.49	0.51	0.01				10.33	15.81	5.48
BFL				0.50	0.49	-0.01				9.99	15.85	5.86
BFR				0.50	0.49	-0.01				9.92	15.85	5.92
BGR	0.51	0.49	-0.03	0.49	0.48	-0.01	10.93	15.61	4.69	10.88	15.80	4.92
CAN	0.50	0.50	0.00				10.02	15.79	5.77			
CAN Alberta				0.48	0.50	0.02				9.86	15.83	5.97
CAN British Columbia				0.50	0.49	-0.02				9.83	15.83	6.00
CAN Nova Scotia				0.49	0.49	0.00				10.03	15.81	5.78
CAN Ontario				0.49	0.50	0.01				9.78	15.85	6.06
CAN Quebec				0.49	0.50	0.01				10.07	15.81	5.73
CZE	0.49	0.52	0.03				10.51	15.70	5.18			
DEU	0.50	0.49	0.00	0.49	0.49	0.00	10.54	15.70	5.16	10.47	15.83	5.36
DNK				0.52	0.51	-0.01				10.91	15.73	4.82
ENG				0.50	0.51	0.01				10.29	15.71	5.42
ESP				0.49	0.49	0.00				9.90	15.85	5.96
FRA	0.48	0.51	0.03	0.48	0.51	0.03	10.12	15.79	5.67	10.02	15.86	5.84
GRC	0.50	0.50	0.00				9.94	15.70	5.75			
HKG	0.50	0.50	0.00	0.49	0.47	-0.02	10.22	15.72	5.50	10.03	15.75	5.71
HUN	0.51	0.50	-0.01	0.50	0.50	-0.01	10.67	15.71	5.04	10.66	15.72	5.06
IND				0.49	0.50	0.01				10.36	15.76	5.40
ISL	0.50	0.50	0.01	0.50	0.50	0.00	9.72	15.63	5.91	9.79	15.74	5.94
ISR	0.50	0.59	0.08	0.48	0.51	0.03	10.01	15.60	5.58	10.08	15.70	5.62
ITA	0.48	0.49	0.01	0.48	0.49	0.00	9.85	15.72	5.87	9.70	15.73	6.03
LTU				0.49	0.49	0.01				10.71	15.82	5.11
LUX				0.49	0.49	0.00				11.43	15.83	4.40
LVA	0.48	0.51	0.03	0.48	0.51	0.03	11.05	15.71	4.66	10.97	15.77	4.80
MKD	0.49	0.49	0.00				10.65	15.59	4.93			
NLD				0.51	0.50	-0.01				10.26	15.72	5.47
NOR	0.48	0.49	0.01	0.49	0.49	-0.01	9.97	15.73	5.76	9.79	15.80	6.01
NZL	0.49	0.50	0.01	0.49	0.49	0.00	10.05	15.70	5.65	10.03	15.77	5.73
POL				0.51	0.50	-0.01				9.89	15.72	5.83
QAT				0.50	0.49	0.00				9.75	15.74	5.99
ROM	0.51	0.53	0.02				11.08	14.68	3.60			
ROU				0.48	0.51	0.03				10.92	15.72	4.80
RUS	0.49	0.50	0.01	0.51	0.50	0.00	10.28	15.70	5.42	10.76	15.80	5.04
SCO	0.52	0.50	-0.01	0.51	0.50	-0.01	9.78	15.61	5.83	9.86	15.69	5.84
SGP				0.48	0.49	0.01				10.40	15.73	5.33
SVK				0.49	0.50	0.02				10.37	15.71	5.34
SVN				0.48	0.49	0.01				9.86	15.72	5.86
SWE	0.49	0.49	0.00	0.48	0.49	0.01	10.80	15.72	4.92	10.85	15.75	4.90
TAP				0.48	0.49	0.02				10.09	15.75	5.66
TTO				0.49	0.50	0.01				10.15	15.68	5.53
USA	0.51	0.52	0.01	0.51	0.49	-0.02	10.22	15.68	5.47	10.09	15.79	5.70

Table A19 – Part II. Distribution of background characteristics with original weights

Cnt/Prov/Econ	Percentage of students born outside test country						Parents born outside: (0) none (1) one parent (2) both parents					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	0.29	0.01	-0.28				1.31	1.10	-0.20			
AUT				0.05	0.06	0.01				1.44	1.38	-0.06
BFL				0.05	0.07	0.02				1.29	1.26	-0.03
BFR				0.09	0.13	0.04				1.60	1.60	0.00
BGR	0.07	0.01	-0.06	0.01	0.01	0.00	1.06	1.04	-0.02	1.07	1.04	-0.03
CAN	0.20	0.11	-0.10				1.59	1.51	-0.08			
CAN Alberta				0.08	0.12	0.04				1.58	1.53	-0.06
CAN British Columbia				0.11	0.18	0.07				1.84	1.83	0.00
CAN Nova Scotia				0.03	0.05	0.02				1.24	1.17	-0.07
CAN Ontario				0.10	0.15	0.05				1.86	1.78	-0.08
CAN Quebec				0.07	0.08	0.01				1.41	1.36	-0.05
CZE	0.04	0.01	-0.03				1.15	1.10	-0.05			
DEU	0.20	0.12	-0.08	0.05	0.07	0.03	1.40	1.40	0.00	1.45	1.43	-0.02
DNK				0.05	0.05	0.00				1.30	1.26	-0.04
ENG				0.08	0.07	-0.01				1.42	1.32	-0.10
ESP				0.10	0.10	0.00				1.29	1.25	-0.04
FRA	0.05	0.04	-0.02	0.05	0.05	0.00	1.45	1.37	-0.08	1.46	1.39	-0.07
GRC	0.11	0.07	-0.04				1.29	1.16	-0.13			
HKG	0.28	0.21	-0.07	0.17	0.23	0.06	2.01	2.06	0.06	1.77	1.98	0.21
HUN	0.11	0.02	-0.08	0.02	0.02	0.00	1.09	1.05	-0.03	1.10	1.07	-0.02
IND				0.08	0.01	-0.07				1.24	1.01	-0.23
ISL	0.16	0.06	-0.10	0.07	0.07	-0.01	1.15	1.07	-0.08	1.19	1.12	-0.06
ISR	0.23	0.11	-0.12	0.07	0.09	0.03	1.63	1.71	0.08	1.56	1.53	-0.03
ITA	0.05	0.02	-0.02	0.05	0.06	0.00	1.15	1.06	-0.09	1.21	1.17	-0.04
LTU				0.01	0.01	-0.01				1.13	1.12	-0.01
LUX				0.13	0.19	0.06				1.99	1.95	-0.04
LVA	0.09	0.30	0.22	0.26	0.02	-0.24	1.44	1.62	0.18	1.62	1.24	-0.38
MKD	0.08	0.05	-0.02				1.15	1.15	0.00			
NLD				0.04	0.05	0.01				1.35	1.33	-0.02
NOR	0.09	0.06	-0.03	0.03	0.05	0.02	1.24	1.16	-0.08	1.25	1.22	-0.03
NZL	0.17	0.17	0.00	0.14	0.21	0.07	1.60	1.57	-0.03	1.62	1.65	0.03
POL				0.01	0.00	0.00				1.04	1.01	-0.03
QAT				0.17	0.28	0.11				1.68	1.98	0.30
ROM	0.03	0.00	-0.03				1.05	1.01	-0.03			
ROU				0.01	0.01	-0.01				1.06	1.03	-0.03
RUS	0.09	0.05	-0.03	0.05	0.07	0.02	1.33	1.18	-0.15	1.28	1.33	0.06
SCO	0.38	0.06	-0.32	0.04	0.05	0.00	1.25	1.30	0.05	1.27	1.15	-0.13
SGP				0.10	0.12	0.02				1.54	1.46	-0.08
SVK				0.01	0.01	0.00				1.10	1.07	-0.04
SVN				0.02	0.02	0.00				1.27	1.24	-0.03
SWE	0.12	0.08	-0.03	0.05	0.06	0.01	1.36	1.32	-0.04	1.40	1.35	-0.05
TAP				0.06	0.01	-0.05				1.19	1.03	-0.16
TTO				0.05	0.04	-0.02				1.24	1.13	-0.10
USA	0.19	0.07	-0.12	0.07	0.07	0.00	1.50	1.32	-0.18	1.50	1.46	-0.03

Table A19 – Part III. Distribution of background characteristics with original weights

Cnt/ Prov/ Econ	Percentage of students speaking a different language at home than the language of assessment						Number of books at home: (1) 0-10 (2) 11-25 (3) 26-100 (4)101-200 (5) more than 200					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	Pisa 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	0.05	0.00	-0.05				1.70	1.99	0.30			
AUT				0.10	0.13	0.03				3.25	3.22	-0.03
BFL				0.07	0.26	0.19				2.96	2.99	0.03
BFR				0.08	0.18	0.10				2.94	3.25	0.31
BGR	0.02	0.04	0.01	0.13	0.11	-0.02	2.57	2.74	0.17	2.91	2.90	-0.01
CAN	0.02	0.09	0.08				2.59	2.80	0.21			
CAN Alberta				0.11	0.13	0.02				3.43	3.51	0.07
CAN British Columbia				0.18	0.21	0.03				3.43	3.57	0.14
CAN Nova Scotia				0.05	0.04	0.00				3.36	3.63	0.27
CAN Ontario				0.12	0.16	0.05				3.29	3.49	0.21
CAN Quebec				0.10	0.14	0.04				3.12	3.12	0.00
CZE	0.01	0.01	0.00				2.78	2.94	0.16			
DEU	0.01	0.08	0.07	0.10	0.12	0.02	2.60	2.68	0.08	3.53	3.32	-0.21
DNK				0.05	0.05	0.00				3.50	3.19	-0.30
ENG				0.14	0.07	-0.07				3.30	3.20	-0.10
ESP				0.22	0.18	-0.04				3.21	3.40	0.19
FRA	0.01	0.04	0.03	0.05	0.08	0.03	2.50	2.52	0.02	3.21	3.11	-0.10
GRC	0.00	0.03	0.02				2.37	2.38	0.02			
HKG	0.05	0.05	0.00	0.03	0.07	0.04	1.89	1.89	-0.01	2.70	2.73	0.03
HUN	0.01	0.00	-0.01	0.03	0.01	-0.02	2.95	2.97	0.02	3.57	3.53	-0.04
IND				0.43	0.65	0.21				1.57	2.30	0.73
ISL	0.01	0.02	0.01	0.07	0.03	-0.04	2.98	3.01	0.03	3.75	3.71	-0.04
ISR	0.02	0.09	0.07	0.12	0.12	0.00	2.40	2.83	0.44	3.02	3.21	0.19
ITA	0.01	0.01	0.00	0.03	0.15	0.12	2.35	2.63	0.28	3.03	3.18	0.14
LTU				0.02	0.04	0.02				3.10	2.96	-0.14
LUX				0.78	0.89	0.11				3.37	3.50	0.13
LVA	0.01	0.00	-0.01	0.07	0.10	0.02	2.87	3.02	0.15	3.58	3.32	-0.26
MKD	0.02	0.02	0.00				1.99	2.08	0.09			
NLD				0.11	0.07	-0.04				3.10	3.10	0.00
NOR	0.01	0.05	0.04	0.05	0.07	0.02	3.04	2.91	-0.14	3.80	3.59	-0.21
NZL	0.02	0.09	0.08	0.05	0.14	0.09	2.65	2.79	0.14	3.35	3.46	0.11
POL				0.01	0.01	0.00				3.04	3.13	0.10
QAT				0.11	0.39	0.28				2.79	3.00	0.22
ROM	0.02	0.00	-0.02				2.07	2.38	0.31			
ROU				0.04	0.03	0.00				2.45	2.81	0.36
RUS	0.04	0.07	0.03	0.07	0.10	0.03	2.49	2.82	0.32	3.32	3.26	-0.06
SCO	0.02	0.04	0.02	0.08	0.03	-0.05	2.42	2.69	0.27	3.12	3.06	-0.06
SGP				0.40	0.59	0.19				2.83	3.14	0.31
SVK				0.05	0.06	0.01				3.12	3.09	-0.03
SVN				0.05	0.05	0.01				3.17	3.04	-0.14
SWE	0.01	0.07	0.06	0.10	0.09	0.00	3.00	2.92	-0.08	3.86	3.61	-0.25
TAP				0.13	0.22	0.09				2.89	3.17	0.28
TTO				0.03	0.03	0.00				2.88	3.23	0.35
USA	0.02	0.10	0.09	0.17	0.13	-0.04	2.54	2.56	0.02	3.03	2.95	-0.07

Table A19 – Part IV. Distribution of background characteristics with original weights

Cnt/Prov/Econ	Father's ISCED education level						Mother's ISCED education level					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	2.41	2.63	0.22				2.44	2.62	0.18			
AUT				3.13	3.30	0.16				3.04	3.12	0.09
BFL				3.19	3.25	0.07				3.28	3.33	0.05
BFR				2.96	3.28	0.32				3.03	3.37	0.34
BGR	2.92	3.20	0.28	2.86	3.19	0.33	2.93	3.25	0.32	2.88	3.22	0.34
CAN	3.00	3.30	0.30				3.07	3.32	0.26			
CAN Alberta				3.05	3.44	0.39				3.11	3.49	0.38
CAN British Columbia				3.10	3.43	0.33				3.16	3.52	0.37
CAN Nova Scotia				2.97	3.31	0.34				3.13	3.49	0.36
CAN Ontario				3.14	3.47	0.33				3.19	3.56	0.38
CAN Quebec				3.06	3.33	0.28				3.16	3.46	0.30
CZE	3.08	3.13	0.04				3.06	3.07	0.01			
DEU	3.01	3.17	0.16	2.85	3.20	0.35	2.92	2.98	0.06	2.76	3.03	0.26
DNK				3.31	3.24	-0.07				3.38	3.39	0.02
ENG				3.01	3.28	0.27				3.00	3.33	0.33
ESP				2.92	2.75	-0.17				2.91	2.77	-0.14
FRA	2.63	3.03	0.39	2.98	3.13	0.15	2.71	2.97	0.26	3.06	3.18	0.12
GRC	2.63	2.98	0.35				2.71	2.84	0.12			
HKG	2.32	2.35	0.04	2.63	2.43	-0.20	2.29	2.25	-0.04	2.62	2.36	-0.26
HUN	3.06	3.10	0.04	3.01	3.13	0.12	3.06	3.03	-0.02	2.99	3.14	0.15
IND				2.03	2.21	0.18				2.05	2.02	-0.02
ISL	2.96	3.03	0.07	3.08	3.22	0.13	2.89	2.75	-0.14	3.18	3.19	0.01
ISR	2.96	3.04	0.09	3.09	3.25	0.16	2.95	3.16	0.21	3.12	3.27	0.16
ITA	2.63	2.71	0.09	2.61	2.81	0.21	2.65	2.68	0.03	2.67	2.85	0.18
LTU				3.12	3.29	0.16				3.22	3.45	0.23
LUX				2.69	3.04	0.35				2.61	2.93	0.32
LVA	3.02	3.18	0.15	3.10	3.25	0.15	3.09	3.27	0.17	3.20	3.43	0.23
MKD	2.58	3.08	0.50				2.42	2.88	0.46			
NLD				3.06	3.22	0.16				3.03	3.18	0.15
NOR	3.26	3.22	-0.04	3.27	3.43	0.16	3.26	3.19	-0.07	3.35	3.52	0.17
NZL	3.02	3.19	0.16	3.05	3.17	0.12	3.08	3.20	0.12	3.12	3.23	0.11
POL				2.49	3.05	0.56				2.61	3.10	0.48
QAT				2.93	3.33	0.40				2.86	3.15	0.29
ROM	2.85	2.96	0.11				2.78	2.86	0.07			
ROU				2.69	3.19	0.49				2.64	3.17	0.53
RUS	3.07	3.20	0.13	3.16	3.72	0.55	3.11	3.29	0.17	3.20	3.78	0.58
SCO	2.79	3.12	0.33	2.99	3.16	0.16	2.81	3.15	0.34	3.06	3.33	0.27
SGP				2.89	3.01	0.12				2.81	2.91	0.10
SVK				3.05	3.15	0.10				3.03	3.17	0.14
SVN				3.11	3.15	0.04				3.15	3.21	0.06
SWE	3.00	3.18	0.18	3.13	3.28	0.14	3.12	3.29	0.17	3.28	3.47	0.19
TAP				2.92	3.07	0.14				2.91	3.07	0.16
TTO				2.69	2.88	0.20				2.80	2.88	0.08
USA	0.00	3.20	3.20	0.00	3.23	3.23	0.00	3.17	3.17	0.00	3.32	3.32

Table A20 – Part I. Distribution of background characteristics after reweighting

Cnt/Prov/Econ	Percentage of girls						Age (in years)					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	0.51	0.50	-0.01				10.09	15.77	5.68			
AUT				0.50	0.50	0.00				10.33	15.81	5.48
BFL				0.52	0.50	-0.02				10.01	15.85	5.85
BFR				0.47	0.50	0.03				9.96	15.85	5.89
BGR	0.50	0.50	0.00	0.50	0.50	0.00	10.89	15.61	4.73	10.86	15.80	4.94
CAN	0.47	0.50	0.03				10.01	15.79	5.78			
CAN Alberta				0.51	0.50	-0.01				9.85	15.83	5.98
CAN British Columbia				0.49	0.50	0.01				9.82	15.83	6.01
CAN Nova Scotia				0.51	0.50	-0.01				10.02	15.81	5.79
CAN Ontario				0.48	0.50	0.02				9.77	15.85	6.07
CAN Quebec				0.50	0.50	0.00				10.05	15.81	5.75
CZE	0.50	0.50	0.00				10.50	15.70	5.19			
DEU	0.49	0.50	0.01	0.49	0.50	0.01	10.54	15.70	5.16	10.49	15.83	5.34
DNK				0.49	0.50	0.01				10.91	15.73	4.82
ENG				0.49	0.50	0.01				10.29	15.71	5.42
ESP				0.51	0.50	-0.01				9.90	15.85	5.95
FRA	0.49	0.50	0.01	0.50	0.50	0.00	10.09	15.79	5.71	10.02	15.86	5.85
GRC	0.48	0.50	0.02				9.91	15.70	5.79			
HKG	0.50	0.50	0.00	0.51	0.50	-0.01	10.16	15.72	5.55	10.08	15.75	5.66
HUN	0.50	0.50	0.00	0.50	0.50	0.00	10.65	15.71	5.06	10.66	15.72	5.06
IND				0.51	0.50	-0.01				10.30	15.76	5.46
ISL	0.50	0.50	0.00	0.50	0.50	0.00	9.73	15.63	5.90	9.79	15.74	5.95
ISR	0.51	0.50	-0.01	0.50	0.50	0.00	10.01	15.60	5.59	10.07	15.70	5.62
ITA	0.50	0.50	0.00	0.49	0.50	0.01	9.83	15.72	5.89	9.69	15.73	6.04
LTU				0.49	0.50	0.01				10.70	15.82	5.12
LUX				0.50	0.50	0.00				11.42	15.83	4.41
LVA	0.51	0.50	-0.01	0.49	0.50	0.01	11.02	15.71	4.70	10.99	15.77	4.78
MKD	0.51	0.50	-0.01				10.64	15.59	4.95			
NLD				0.50	0.50	0.00				10.24	15.72	5.48
NOR	0.50	0.50	0.00	0.50	0.50	0.00	9.97	15.73	5.76	9.79	15.80	6.01
NZL	0.50	0.50	0.00	0.50	0.50	0.00	10.06	15.70	5.63	10.03	15.76	5.73
POL				0.49	0.50	0.01				9.89	15.72	5.83
QAT				0.49	0.50	0.01				9.78	15.74	5.96
ROM	0.49	0.50	0.01	0.49	0.50	0.01	11.06	14.68	3.62	10.89	15.72	4.83
RUS	0.49	0.50	0.01	0.52	0.50	-0.02	10.23	15.70	5.47	10.69	15.80	5.11
SCO	0.48	0.50	0.02	0.49	0.50	0.01	9.80	15.61	5.81	9.86	15.69	5.84
SGP				0.51	0.50	-0.01				10.43	15.73	5.30
SVK				0.50	0.50	0.00				10.35	15.71	5.37
SVN				0.50	0.50	0.00				9.86	15.72	5.86
SWE	0.49	0.50	0.01	0.49	0.50	0.01	10.82	15.72	4.91	10.86	15.75	4.90
TAP				0.49	0.50	0.01				10.10	15.75	5.64
TTO				0.50	0.50	0.00				10.09	15.68	5.59
USA	0.48	0.50	0.02	0.49	0.50	0.01	10.23	15.68	5.46	10.10	15.79	5.69

Table A20 – Part II. Distribution of background characteristics after reweighting

Cnt/Prov/Econ	Percentage of students born outside test country						Parents born outside: (0) none (1) one parent (2) both parents					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	0.01	0.01	0.00				1.10	1.10	0.01			
AUT				0.06	0.06	0.00				1.38	1.38	0.00
BFL				0.06	0.07	0.00				1.26	1.26	0.00
BFR				0.17	0.13	-0.04				1.69	1.60	-0.08
BGR	0.01	0.01	0.00	0.01	0.01	0.00	1.04	1.04	0.00	1.04	1.04	0.00
CAN	0.12	0.11	-0.01				1.54	1.51	-0.02			
CAN Alberta				0.14	0.12	-0.02				1.56	1.53	-0.04
CAN British Columbia				0.20	0.18	-0.02				1.87	1.83	-0.04
CAN Nova Scotia				0.04	0.05	0.00				1.17	1.17	0.00
CAN Ontario				0.16	0.15	-0.02				1.82	1.78	-0.05
CAN Quebec				0.09	0.08	-0.01				1.40	1.36	-0.04
CZE	0.01	0.01	0.00				1.10	1.10	0.00			
DEU	0.12	0.12	0.00	0.08	0.07	-0.01	1.41	1.40	-0.01	1.46	1.43	-0.03
DNK				0.05	0.05	-0.01				1.29	1.26	-0.03
ENG				0.08	0.07	-0.01				1.34	1.32	-0.02
ESP				0.10	0.10	0.00				1.26	1.25	-0.01
FRA	0.04	0.04	-0.01	0.05	0.05	0.00	1.47	1.37	-0.10	1.41	1.39	-0.02
GRC	0.07	0.07	0.00				1.16	1.16	0.00			
HKG	0.20	0.21	0.00	0.23	0.23	-0.01	2.04	2.06	0.03	1.97	1.98	0.01
HUN	0.02	0.02	0.00	0.02	0.02	0.00	1.06	1.05	0.00	1.07	1.07	0.00
IND				0.01	0.01	0.00				1.01	1.01	0.00
ISL	0.06	0.06	0.00	0.07	0.07	0.00	1.08	1.07	0.00	1.13	1.12	0.00
ISR	0.11	0.11	0.00	0.09	0.09	0.00	1.73	1.71	-0.02	1.53	1.53	0.00
ITA	0.02	0.02	0.00	0.06	0.06	0.00	1.06	1.06	0.00	1.17	1.17	0.01
LTU				0.01	0.01	0.00				1.12	1.12	0.00
LUX				0.20	0.19	0.00				1.98	1.95	-0.02
LVA	0.31	0.30	-0.01	0.02	0.02	0.00	1.64	1.62	-0.02	1.23	1.24	0.01
MKD	0.09	0.05	-0.04				1.23	1.15	-0.07			
NLD				0.05	0.05	0.00				1.32	1.33	0.01
NOR	0.05	0.06	0.00	0.06	0.05	-0.01	1.15	1.16	0.01	1.24	1.22	-0.02
NZL	0.18	0.17	-0.01	0.21	0.21	0.00	1.59	1.57	-0.03	1.65	1.65	0.00
POL				0.01	0.00	0.00				1.02	1.01	-0.01
QAT				0.26	0.28	0.02				1.96	1.98	0.02
ROM	0.00	0.00	0.00	0.01	0.01	0.00	1.01	1.01	0.00	1.03	1.03	0.00
RUS	0.05	0.05	0.00	0.07	0.07	-0.01	1.18	1.18	0.00	1.35	1.33	-0.02
SCO	0.07	0.06	-0.02	0.05	0.05	0.00	1.40	1.30	-0.10	1.15	1.15	-0.01
SGP				0.12	0.12	-0.01				1.47	1.46	-0.01
SVK				0.01	0.01	0.00				1.07	1.07	0.00
SVN				0.02	0.02	0.00				1.24	1.24	0.00
SWE	0.08	0.08	0.00	0.06	0.06	0.00	1.32	1.32	0.00	1.35	1.35	-0.01
TAP				0.01	0.01	0.00				1.03	1.03	0.00
TTO				0.04	0.04	0.00				1.14	1.13	0.00
USA	0.07	0.07	0.00	0.07	0.07	0.00	1.33	1.32	-0.01	1.46	1.46	0.00

Table A20 – Part III. Distribution of background characteristics after reweighting

Cnt/ Prov/ Econ	Percentage of students speaking a different language at home than the language of assessment						Number of books at home: (1) 0-10 (2) 11-25 (3) 26-100 (4)101-200 (5) more than 200					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	0.00	0.00	0.00				2.12	1.99	-0.13			
AUT				0.13	0.13	0.00				3.27	3.22	-0.05
BFL				0.26	0.26	0.00				3.12	2.99	-0.13
BFR				0.28	0.18	-0.10				3.25	3.25	0.00
BGR	0.03	0.04	0.01	0.11	0.11	0.01	2.79	2.74	-0.05	2.97	2.90	-0.06
CAN	0.11	0.09	-0.02				2.85	2.80	-0.05			
CAN Alberta				0.15	0.13	-0.02				3.48	3.51	0.02
CAN British Columbia				0.23	0.21	-0.03				3.58	3.57	0.00
CAN Nova Scotia				0.05	0.04	0.00				3.65	3.63	-0.02
CAN Ontario				0.18	0.16	-0.02				3.49	3.49	0.01
CAN Quebec				0.15	0.14	-0.02				3.12	3.12	0.00
CZE	0.01	0.01	0.00				2.95	2.94	0.00			
DEU	0.08	0.08	-0.01	0.13	0.12	-0.01	2.70	2.68	-0.02	3.33	3.32	-0.01
DNK				0.06	0.05	-0.01				3.20	3.19	-0.01
ENG				0.08	0.07	-0.01				3.16	3.20	0.03
ESP				0.18	0.18	0.00				3.41	3.40	-0.01
FRA	0.09	0.04	-0.05	0.09	0.08	-0.01	2.54	2.52	-0.02	3.12	3.11	-0.01
GRC	0.02	0.03	0.01				2.42	2.38	-0.04			
HKG	0.06	0.05	-0.01	0.08	0.07	-0.01	1.92	1.89	-0.03	2.77	2.74	-0.03
HUN	0.00	0.00	0.00	0.01	0.01	0.00	2.97	2.97	0.00	3.51	3.53	0.01
IND				0.62	0.65	0.03				2.27	2.30	0.03
ISL	0.02	0.02	0.00	0.03	0.03	0.00	3.02	3.01	-0.01	3.71	3.71	0.00
ISR	0.08	0.09	0.00	0.12	0.12	0.00	2.84	2.83	-0.01	3.21	3.20	0.00
ITA	0.01	0.01	0.00	0.18	0.15	-0.03	2.63	2.63	0.01	3.22	3.18	-0.04
LTU				0.04	0.04	0.00				3.01	2.97	-0.05
LUX				0.89	0.89	0.00				3.51	3.50	-0.01
LVA	0.00	0.00	0.00	0.10	0.10	0.00	3.00	3.02	0.02	3.34	3.32	-0.02
MKD	0.01	0.02	0.00				2.07	2.08	0.01			
NLD				0.07	0.07	0.00				3.12	3.10	-0.02
NOR	0.05	0.05	0.01	0.08	0.07	-0.01	2.92	2.91	-0.01	3.61	3.59	-0.02
NZL	0.11	0.09	-0.01	0.15	0.14	0.00	2.82	2.79	-0.03	3.46	3.46	0.00
POL				0.01	0.01	-0.01				3.18	3.14	-0.04
QAT				0.36	0.39	0.03				2.96	3.00	0.05
ROM	0.00	0.00	0.00	0.03	0.03	0.01	2.38	2.38	0.00	2.92	2.81	-0.11
RUS	0.07	0.07	0.01	0.11	0.10	-0.02	2.84	2.82	-0.03	3.36	3.26	-0.10
SCO	0.10	0.04	-0.05	0.03	0.03	0.00	2.70	2.69	0.00	3.07	3.06	0.00
SGP				0.60	0.59	-0.01				3.15	3.14	-0.01
SVK				0.06	0.06	0.00				3.10	3.09	-0.01
SVN				0.05	0.05	0.00				3.06	3.04	-0.02
SWE	0.06	0.07	0.00	0.09	0.09	0.00	2.97	2.93	-0.04	3.65	3.61	-0.04
TAP				0.22	0.22	0.00				3.19	3.17	-0.02
TTO				0.03	0.03	0.00				3.22	3.23	0.01
USA	0.11	0.11	0.00	0.13	0.13	0.00	2.56	2.55	-0.01	2.98	2.95	-0.02

Table A20 – Part IV. Distribution of background characteristics after reweighting

Cnt/Prov/Econ	Father's ISCED education level						Mother's ISCED education level					
	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.	PIRLS 2001	PISA 2000	diff.	PIRLS 2006	PISA 2009	diff.
ARG	2.66	2.62	-0.03				2.62	2.62	0.00			
AUT				3.30	3.30	0.00				3.12	3.12	0.00
BFL				3.28	3.25	-0.03				3.36	3.33	-0.03
BFR				3.18	3.28	0.11				3.27	3.37	0.09
BGR	3.20	3.20	0.00	3.18	3.19	0.01	3.25	3.25	0.00	3.21	3.22	0.00
CAN	3.33	3.30	-0.03				3.36	3.32	-0.04			
CAN Alberta				3.43	3.44	0.00				3.49	3.49	0.00
CAN British Columbia				3.43	3.43	0.00				3.52	3.52	0.01
CAN Nova Scotia				3.33	3.31	-0.01				3.48	3.49	0.01
CAN Ontario				3.47	3.47	0.00				3.57	3.56	0.00
CAN Quebec				3.33	3.33	0.00				3.46	3.46	0.00
CZE	3.13	3.13	-0.01				3.06	3.07	0.01			
DEU	3.17	3.17	0.00	3.21	3.20	-0.01	3.00	2.98	-0.02	3.03	3.03	-0.01
DNK				3.24	3.24	0.00				3.39	3.39	0.01
ENG				3.27	3.28	0.01				3.33	3.33	0.00
ESP				2.74	2.75	0.00				2.77	2.77	0.00
FRA	3.05	3.03	-0.02	3.13	3.13	0.00	3.00	2.97	-0.03	3.17	3.18	0.01
GRC	3.00	2.98	-0.03				2.87	2.84	-0.03			
HKG	2.39	2.35	-0.03	2.46	2.43	-0.02	2.27	2.25	-0.02	2.38	2.36	-0.03
HUN	3.11	3.10	-0.01	3.12	3.13	0.00	3.03	3.03	0.00	3.13	3.14	0.01
IND				2.30	2.21	-0.09				2.07	2.02	-0.05
ISL	3.04	3.03	-0.01	3.22	3.22	0.00	2.77	2.75	-0.02	3.19	3.20	0.01
ISR	3.04	3.06	0.01	3.25	3.25	0.00	3.16	3.17	0.01	3.26	3.27	0.01
ITA	2.73	2.71	-0.01	2.87	2.81	-0.06	2.70	2.68	-0.02	2.92	2.85	-0.07
LTU				3.28	3.29	0.01				3.44	3.45	0.01
LUX				3.01	3.03	0.02				2.90	2.93	0.03
LVA	3.22	3.18	-0.04	3.26	3.25	-0.01	3.25	3.27	0.01	3.43	3.43	0.00
MKD	3.10	3.08	-0.03				2.88	2.88	0.00			
NLD				3.22	3.22	0.00				3.17	3.18	0.00
NOR	3.22	3.22	-0.01	3.43	3.43	0.01	3.19	3.19	0.00	3.51	3.52	0.01
NZL	3.22	3.19	-0.03	3.18	3.17	0.00	3.24	3.20	-0.04	3.24	3.23	-0.01
POL				3.06	3.05	-0.01				3.10	3.10	0.00
QAT				3.24	3.33	0.09				3.04	3.15	0.11
ROM	2.98	2.96	-0.02	3.17	3.19	0.02	2.87	2.86	-0.02	3.15	3.17	0.02
RUS	3.21	3.20	-0.01	3.71	3.72	0.01	3.30	3.29	-0.02	3.76	3.78	0.02
SCO	3.07	3.12	0.05	3.15	3.16	0.01	3.18	3.15	-0.03	3.33	3.33	0.00
SGP				3.02	3.01	-0.01				2.91	2.91	0.00
SVK				3.15	3.15	0.00				3.16	3.17	0.00
SVN				3.15	3.15	0.00				3.20	3.20	0.01
SWE	3.18	3.18	0.00	3.25	3.28	0.02	3.28	3.29	0.02	3.45	3.47	0.02
TAP				3.05	3.07	0.02				3.06	3.07	0.01
TTO				2.89	2.88	-0.01				2.88	2.88	0.00
USA	0.00	3.20	3.20	0.00	3.22	3.22	0.00	3.17	3.17	0.00	3.32	3.32

Figure A1. Achievement progress by percentiles in countries with the least achievement progress (PIRLS 2006 to PISA 2009)

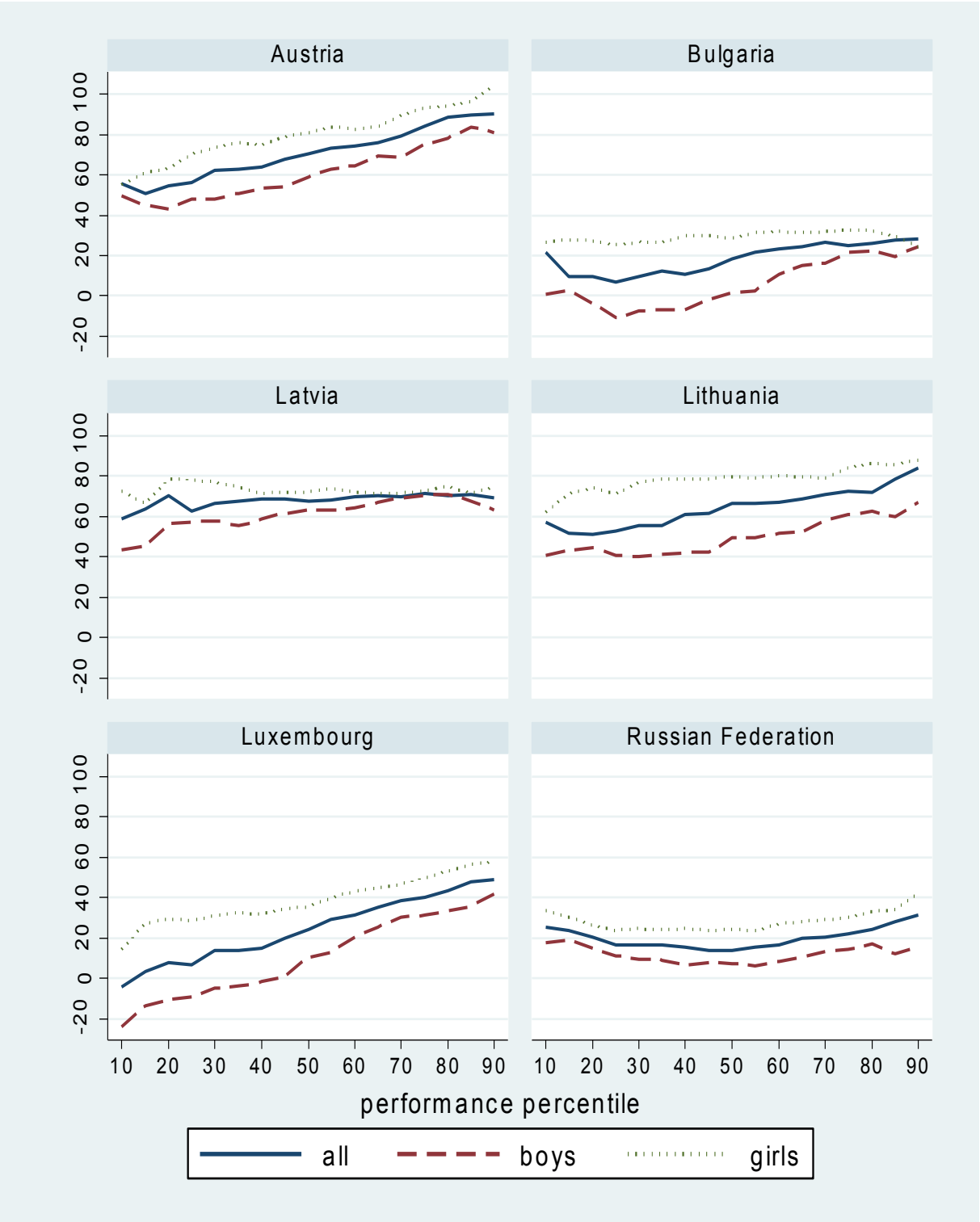


Figure A2. Achievement progress by percentiles in countries with little achievement progress (PIRLS 2006 to PISA 2009)

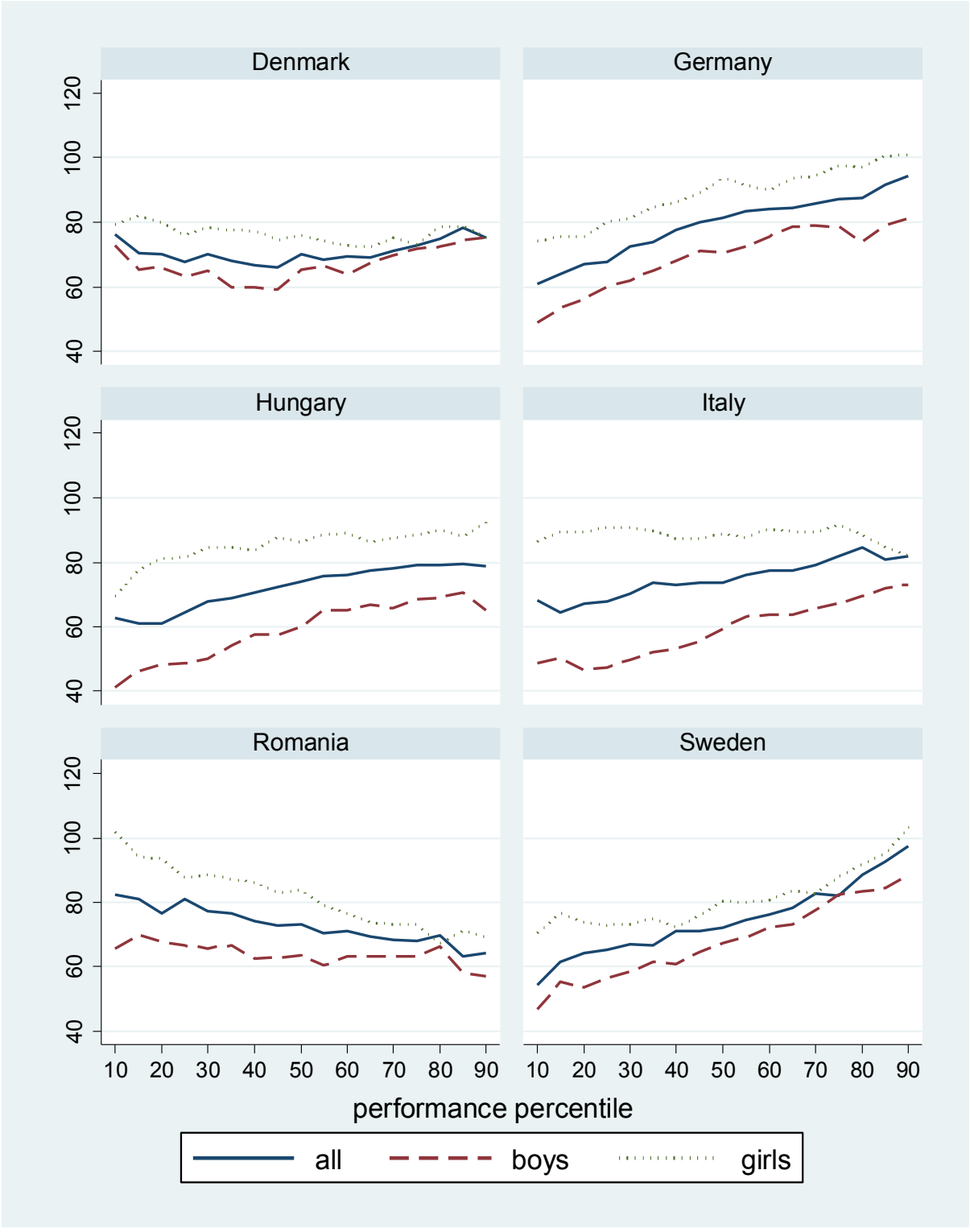


Figure A3. Achievement progress by percentiles in countries with average achievement progress (PIRLS 2006 to PISA 2009)

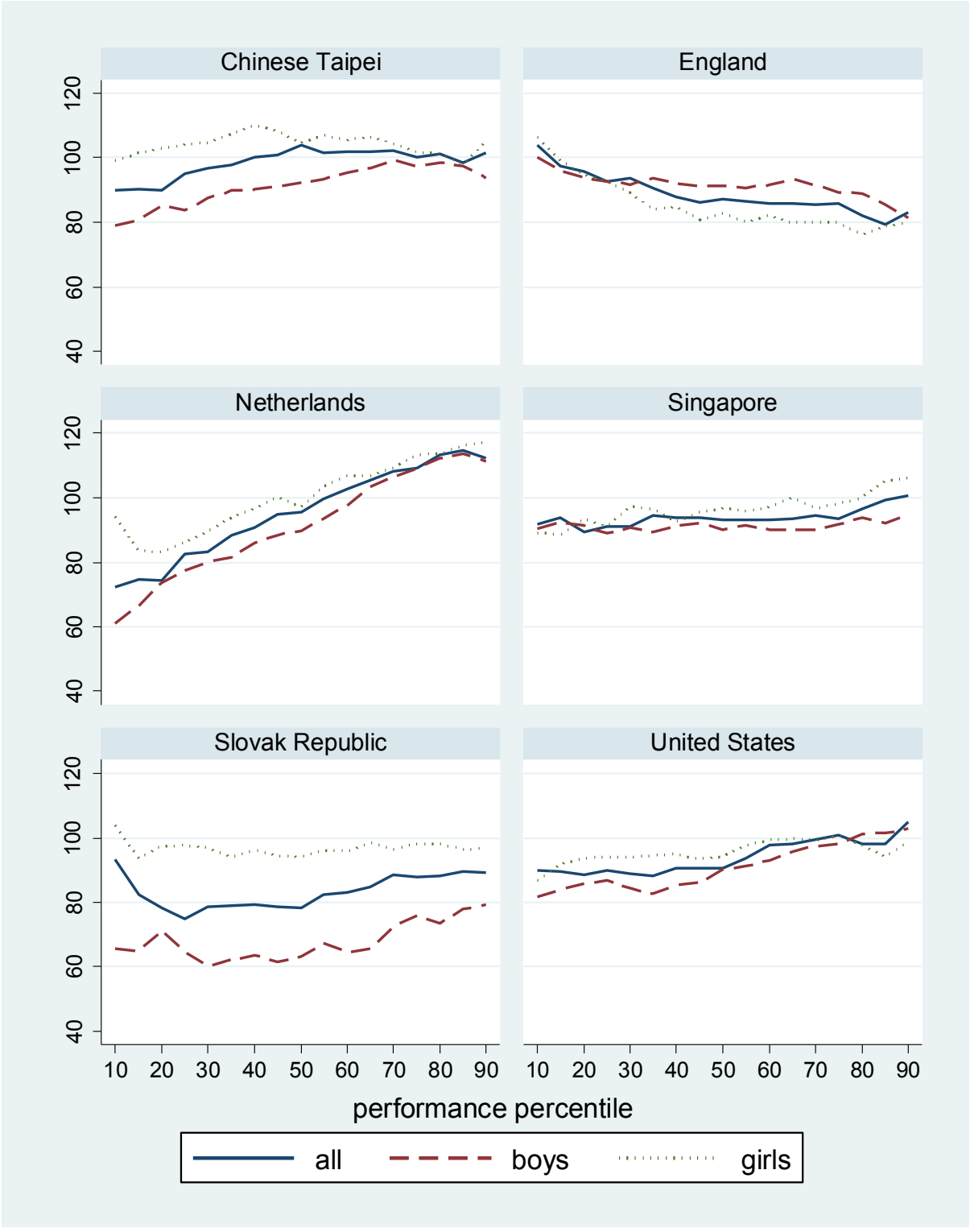


Figure A4. Achievement progress by percentiles in countries with above-average achievement progress (PIRLS 2006 to PISA 2009)

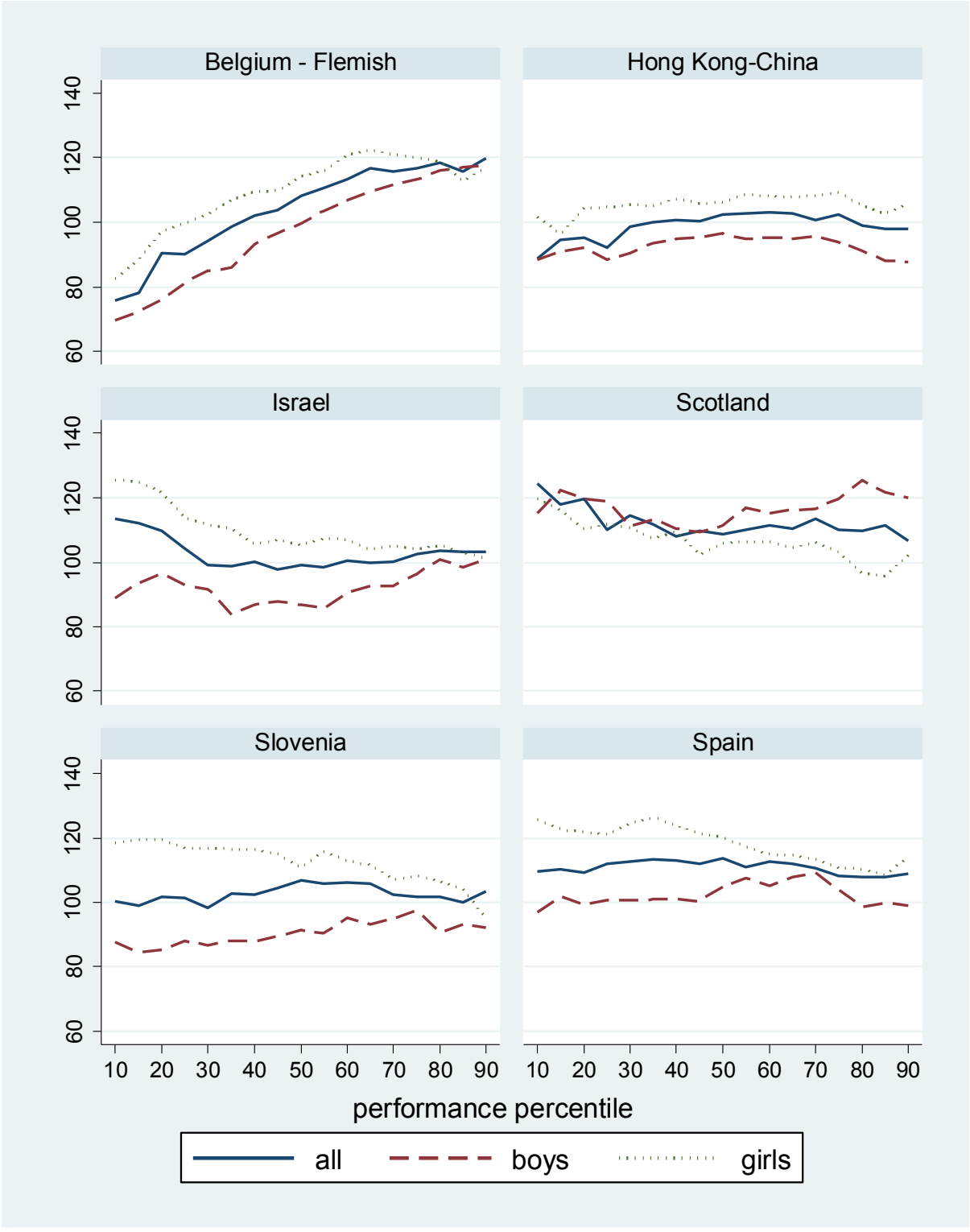


Figure A5. Achievement progress by percentiles in countries with great achievement progress (PIRLS 2006 to PISA 2009)

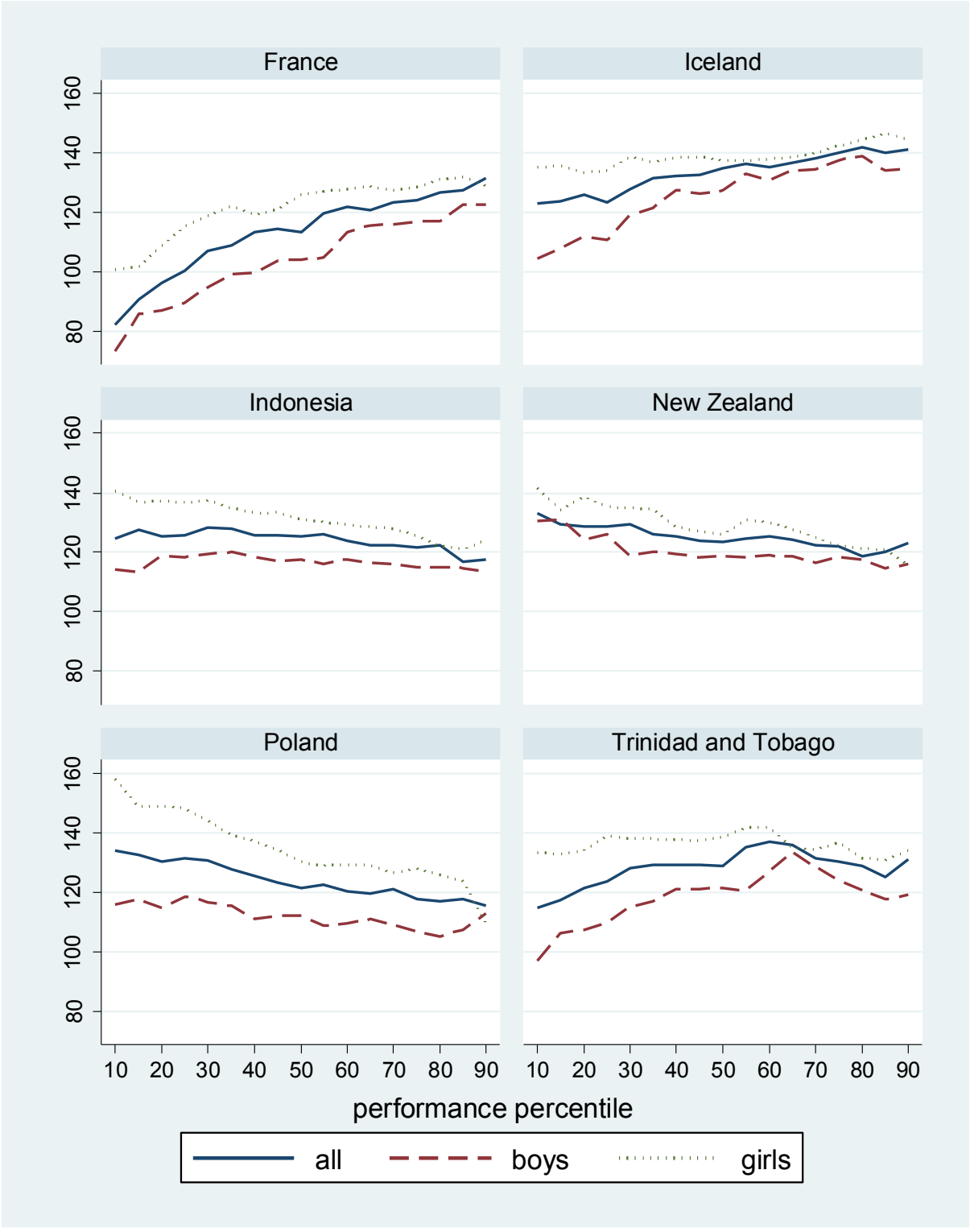


Figure A6. Achievement progress by percentiles in countries with the greatest achievement progress (PIRLS 2006 to PISA 2009)

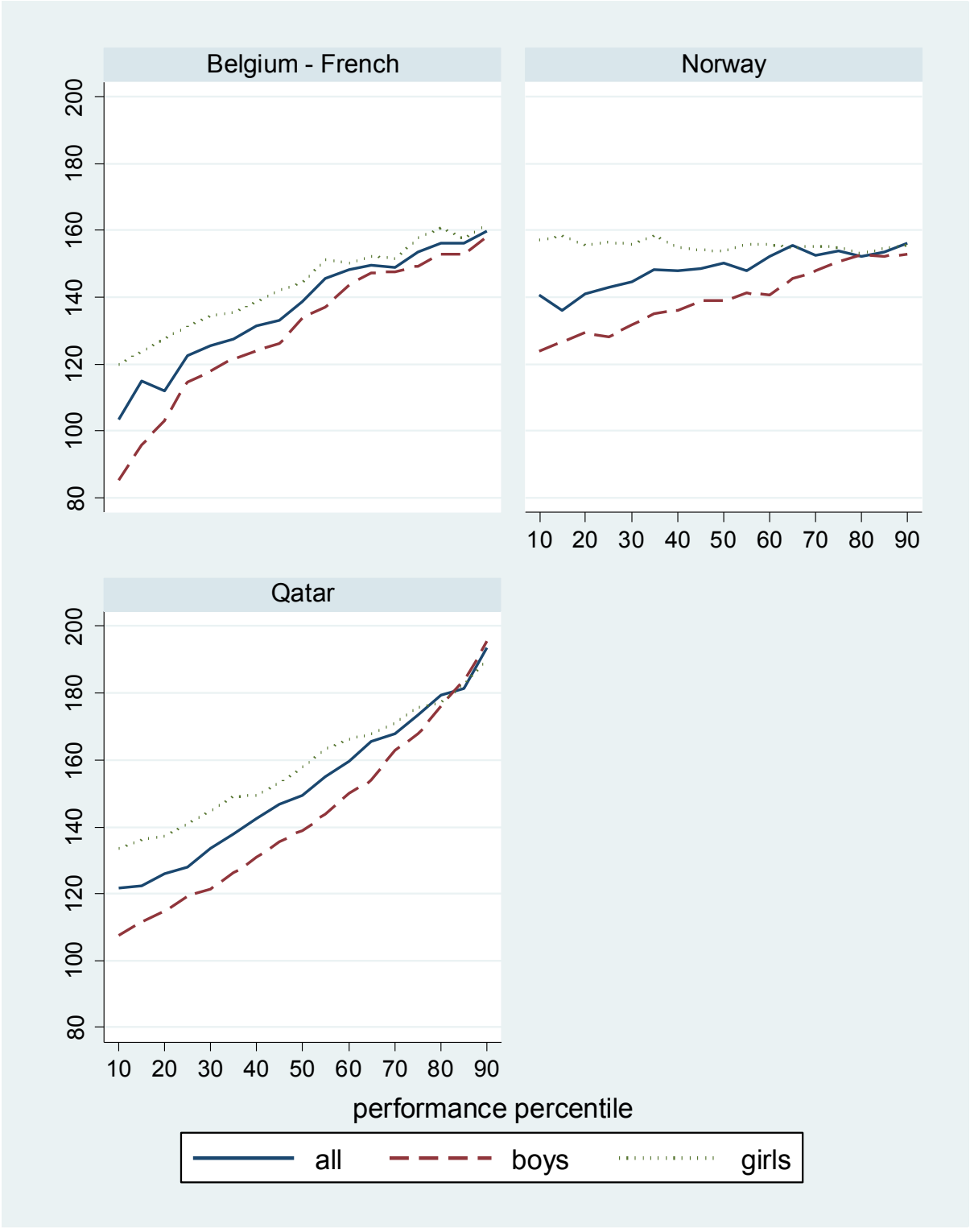
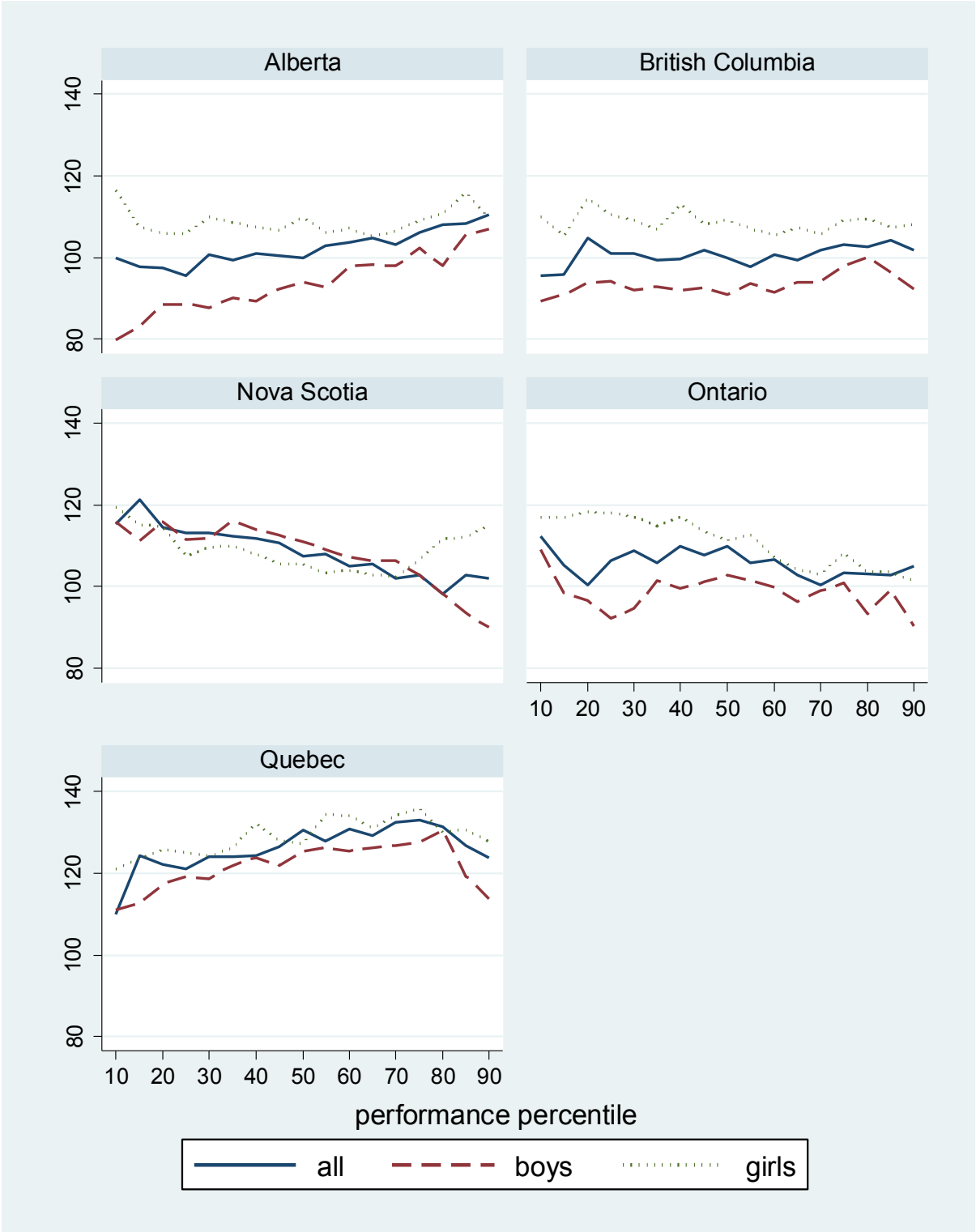


Figure A7. Achievement progress by percentiles in Canadian provinces (PIRLS 2006 to PISA 2009)



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